July 29, 2004

Mr. Lew W. Myers
Interim Site Vice President-Nuclear and
Chief Operating Officer
FirstEnergy Nuclear Operating Company
Perry Nuclear Power Plant
P. O. Box 97, A210
Perry, OH 44081

SUBJECT: PERRY NUCLEAR POWER PLANT
NRC INTEGRATED INSPECTION REPORT 05000440/2004007

Dear Mr. Myers:

On June 30, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Perry Nuclear Power Plant. The enclosed report documents the inspection findings which were discussed on July 8 with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified three findings of very low safety significance (Green). The three findings were determined to involve 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 these findings as non-cited violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

If you contest the subject or severity of these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Perry Nuclear Power Plant.

In accordance with 10 CFR 2.390 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/reading-rm/adams.html** (the Public Electronic Reading Room).

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000440/2004007
w/Attachment: Supplemental Information

cc w/encl: G. Leidich, President - FENOC
J. Hagan, Senior Vice President Engineering
and Services, FENOC
W. O'Malley, Director, Maintenance Department
V. Higaki, Manager, Regulatory Affairs
J. Messina, Director, Nuclear
Services Department
T. Lentz, Director, Nuclear
Engineering Department
F. von Ahn, Plant Manager,
Nuclear Power Plant Department
M. O'Reilly, Attorney, FirstEnergy
Public Utilities Commission of Ohio
Ohio State Liaison Officer
R. Owen, Ohio Department of Health

DOCUMENT NAME: C:\Karen's Documents\ML042110414.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	N	RIII	E				
NAME	MRing for PPelke:ags		MRing					
DATE	07/29/04		07/29/04					

OFFICIAL RECORD COPY

ADAMS Distribution:
AJM
DFT
SPS1
RidsNrrDipmIipb
GEG
HBC
RJP
CAA1
C. Pederson, DRS (hard copy - IR's only)
DRPIII
DRSIII
PLB1
JRK1
ROPreports@nrc.gov

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-440
License No:	NPF-58
Report No:	05000440/2004007
Licensee:	FirstEnergy Nuclear Operating Company (FENOC)
Facility:	Perry Nuclear Power Plant, Unit 1
Location:	P.O. Box 97 A210 Perry, OH 44081
Dates:	April 1 through June 30, 2004
Inspectors:	R. Powell, Senior Resident Inspector J. Ellegood, Resident Inspector L. Ramadan, Reactor Engineer J. House, Senior Radiation Specialist D. Nelson, Radiation Specialist
Approved by:	M. Ring, Chief Branch 1 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000440/2004007; 04/01/2004 - 06/30/2004; Perry Nuclear Power Plant; Adverse Weather, Post-Maintenance Testing, Identification and Resolution of Problems

This report covers a 3-month period of baseline inspection. The inspection was conducted by resident and regional inspectors. This inspection identified three Green issues, all of which involved non-cited violations (NCVs). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. 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.

A. Inspector-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. On April 1, 2004, a finding of very low safety significance was identified by the inspectors in that on three occasions in 2003 the licensee failed to treat identified impaired tornado barriers in accordance with established procedures. The primary cause of this finding was related to the cross-cutting area of Human Performance. The licensee's corrective actions included returning to compliance with their procedure either through repair of the door or performance of an engineering analysis of the door.

  The issue was more than minor because it was associated with the Mitigating System cornerstone attribute of protection against external factors and affected the Mitigating System Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee's failure to follow procedural guidance resulted in the existence of a degraded condition without compensatory action. The issue was of very low safety significance because, if the affected door's tornado wind function was assumed to be completely failed or unavailable, the loss of function by itself (1) would not cause a plant trip; (2) would not degrade two or more trains of a multi-train safety system or function; and (3) would not degrade one or more trains of a system that supports a safety system or function. The inspectors reached their conclusion based on the position of the impaired door relative to safety-related equipment. The issue was an NCV of Technical Specification 5.4 which required the implementation of procedures as recommended in Regulatory Guide 1.33. Regulatory Guide 1.33 recommended the establishment of procedures for equipment control. (Section 1R01.1)

- Green. On March 30, 2004, a self-revealed finding of very low safety significance occurred when the licensee improperly installed test equipment which subsequently damaged a valve in the combustible gas control system. The finding also affected the cross-cutting area of Human Performance because the licensee's procedure, and worker attention to detail, were both less than adequate and contributed to damaging

- the valve. As corrective actions, the licensee replaced the damaged portions of the valve and performed training.

The issue was more than minor because the installation error resulted in over-stressing the valve operator and extending the time the plant was in a limiting condition for operation by four days. As such, the Mitigating System Cornerstone objective of system availability and operability was adversely affected. The finding was of very low safety significance due primarily to the short duration of extended unavailability. The issue was an NCV of Technical Specification 5.4 which required the implementation of procedures as recommended in Regulatory Guide 1.33. Regulatory Guide 1.33 recommended the establishment of procedures for performing maintenance that can affect the performance of safety-related equipment. (Section 1R19)

- Green. On April 10, 2004, a self-revealed finding of very low safety significance occurred when the licensee unintentionally air-rolled the emergency diesel generator (EDG) following replacement of a timing relay. An investigation by the licensee revealed that the test method specified in the procedure actuated the air-start circuit but did not include steps to prevent air-roll of the EDG. This finding also affected the cross-cutting area of Human Performance because the licensee's development of the post-maintenance test failed to either inhibit air-roll of the EDG or verify the EDG could be safely air-rolled. Licensee corrective actions included conducting training for operations and planning personnel on appropriate controls during work activities.

The issue was more than minor because the finding could reasonably be viewed as a precursor to a more significant event because the air-roll was not anticipated by the licensee. The finding was of very low safety significance because no safety-related mitigation systems were affected by the issue. The issue was an NCV of Technical Specification 5.4 which required the implementation of procedures as recommended in Regulatory Guide 1.33. Regulatory Guide 1.33 recommended the establishment of procedures for performing maintenance that can affect the performance of safety-related equipment. (Section 4OA2.3)

B. Licensee-Identified Violations

Two 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 are listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status

The plant began the inspection period at 100 percent power and remained there except for minor downpowers for weekly control rod surveillance testing until May 21. At 4:00 p.m. on May 21 the licensee initiated power reduction after the Division 1 emergency service water (ESW) pump failed. The power reduction continued on May 22 and the main generator was separated from the grid at 8:42 a.m. Rod insertion was completed later that same day at 7:42 p.m. and Mode 3 was entered at 9:39 p.m. The plant entered Mode 4 on May 23 at 6:19 a.m. Following replacement of both the Division 1 and 2 ESW pumps, the plant entered Mode 2 on June 4 and achieved criticality at 9:59 a.m. that same day. Following a series of power maneuvers for rod pattern adjustments, the plant achieved 100 percent power on June 10. Additional power reductions were performed for rod pattern adjustments on June 11 and June 12. After the final adjustment on June 12, the plant remained at 100 percent power, except for minor downpowers for weekly control rod surveillance testing, for the remainder of the assessment period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity and Emergency Preparedness

1REP Equipment Availability and Functional Capability (71111.EP)

.1 Operability Evaluations (OEs)

a. Inspection Scope

The inspectors selected condition reports (CRs) related to potential operability issues for risk-significant components and systems. These CRs were evaluated to determine whether the operability of the components and systems was justified. The inspectors compared the operability and design criteria in the appropriate sections of the Technical Specifications (TSs) and Updated Safety Analysis Report (USAR) to the licensee's evaluations, to verify that the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors verified that the measures were in place, would work as intended, and were properly controlled. Additionally, the inspectors verified, where appropriate, compliance with bounding limitations associated with the evaluations. The inspectors reviewed the following three OEs:

- an OE associated with environmental qualification of main steam isolation valve actuators completed on April 19;
- an OE associated with control room heating ventilation and air conditioning completed on April 23; and
- an OE associated with reactor vessel design transient cycles completed on April 30.

b. Findings

No findings of significance were identified.

.2 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the maintenance rule requirements to verify that component and equipment failures were identified and scoped within the maintenance rule and that select structures, systems, and components were properly categorized and classified as (a)(1) or (a)(2) in accordance with 10 CFR 50.65. The inspectors reviewed station logs, maintenance work orders, selected surveillance test procedures, and a sample of CRs to verify that the licensee was identifying issues related to the maintenance rule at an appropriate threshold and that corrective actions were appropriate. Additionally, the inspectors reviewed the licensee's performance criteria to verify that the criteria adequately monitored equipment performance and to verify that licensee changes to performance criteria were reflected in the licensee's probabilistic risk assessment. During this inspection period, the inspectors reviewed the following two areas:

- redundant reactivity control system; and
- combustible gas control systems.

The problem identification and resolution CRs reviewed are listed in the attached List of Documents Reviewed.

b. Findings

No findings of significance were identified.

1R01 Adverse Weather Protection (71111.01)

.1 Tornado Depressurization Barriers

a. Inspection Scope

On April 1 and 2 the inspectors walked down a sample of credited tornado depressurization barriers to review position and material condition. Additionally, the inspectors reviewed CRs associated with tornado barriers to ensure identified deficiencies were addressed in a timely manner consistent with program direction.

b. Findings

Introduction: A finding of very low safety significance was identified by the inspectors for a violation of TS 5.4, in that, on three occasions in 2003 the licensee failed to treat identified impaired tornado barriers in accordance with established procedures.

Description: On April 1, 2004, the inspectors conducted a routine review of licensee corrective action program documents to verify that issues concerning tornado protection equipment (doors, dampers, etc.) were promptly identified and corrected. The inspectors compared licensee response to identified deficiencies against the guidance/requirements specified in Perry Administrative Procedure (PAP) -0911, "Control Room Boundary Integrity and Tornado Depressurization Barrier Integrity," Rev. 3. The licensee procedure provided guidance for impairment of tornado depressurization barriers for activities such as barrier maintenance and temporary routing of cables and hoses. The procedure specified that if a tornado depressurization barrier was found to be impaired in a manner not defined by a specified activity, licensee personnel were to (1) restore the tornado depressurization barrier's integrity if possible; (2) submit a CR to engineering to evaluate the effects of the impairment on the tornado analysis, and (3) take action as required by the CR's immediate investigation to compensate for the degraded tornado depressurization barrier.

The inspectors identified that on three occasions licensee personnel identified, and documented with a CR, impaired doors which were labeled as tornado barriers. Specifically: (1) on May 8, 2003, fire/tornado barrier door CC-323 was identified as being unable to be latched; (2) on June 23, 2003, fire/tornado barrier door CC-511 was identified as requiring assistance to latch; and (3) on June 25, 2003, fire/tornado barrier door CC-511 was again identified as requiring assistance to close and latch after having been repaired on June 24, 2003. On each of the occasions, the CR was appropriately sent to the control room for Senior Reactor Operator review. In each instance a fire watch was established and a work request was initiated to repair the doors. In each instance, however, the licensee failed to take action to immediately restore the barrier's integrity, failed to obtain engineering evaluation, and failed to take specific compensatory action for the impaired tornado barrier function.

Analysis: The inspectors determined that the licensee's failure to follow procedures for degraded tornado barriers was more than minor because it was associated with the Mitigating System Cornerstone attribute of protection against external factors and affected the Mitigating System Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee's failure to follow PAP-0911 resulted in the existence of a degraded condition without compensatory action. The inspectors concluded that the establishment of an hourly fire watch was not a sufficient compensatory measure for a degraded barrier. The inspectors' conclusion was consistent with the licensee's requirement to have designated personnel stationed in the immediate area of a tornado barrier impaired for maintenance or for routing of cables or hoses. The inspectors further concluded that the initiation of a work request did not constitute action to restore the barrier's integrity.

The inspectors reviewed the licensee's evaluation of the effect of the three door issues on the licensee's tornado analysis. Due to the location of the doors, the doors prevent depressurization of the control complex by being able to close against their door frames and protect against tornado wind loads by latching. The licensee concluded that both doors CC-323 and CC-511 were able to move freely and as such would have been pulled closed during the depressurization scenario due to the orientation of the doors.

As such, they would have been able to function as a depressurization barrier despite the identified impairment. The licensee further determined that since CC-511 is a security door, it was unlikely the door would remain unlatched for any significant period of time. The licensee could not conclude, however, that door CC-323 would have functioned as a tornado wind barrier during its three-day impairment in May 2003. Licensee corrective actions included returning to compliance with their procedure either through repair of the door or performance of an engineering analysis of the door.

Using IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors reviewed the finding against the Phase 1 Screening Worksheet Seismic, Fire, Flooding, and Severe Weather Screening Criteria. The inspectors determined the finding did involve the degradation of equipment specifically designed to mitigate a severe weather initiating event, since the finding involved degradation of tornado doors, and answered "yes" to question 1. The inspectors answered "no" to question 2 since, if the door's tornado wind function was assumed to be completely failed or unavailable, the loss of function by itself (1) would not cause a plant trip; (2) would not degrade two or more trains of a multi-train safety system or function; and (3) would not degrade one or more trains of a system that supports a safety system or function. The inspectors reached their conclusion based on the position of the impaired door relative to safety-related equipment. By answering "no" to question 2, the inspectors screened the finding as being of very low safety significance.

Enforcement: Technical Specification 5.4 states, in part, that procedures shall be established, implemented, and maintained as recommended in Regulatory Guide 1.33. Regulatory Guide 1.33 recommended the establishment of procedures for equipment control. Contrary to these requirements, the licensee failed to adequately implement procedures for control of tornado depressurization barriers. Specifically, PAP-0911 was developed to provide "the method to control inspection, testing, and repair (corrective/planned maintenance) on components associated with the control room boundary and tornado depressurization barriers." The licensee failed to follow the procedure on three occasions identified by the inspectors. Because of the very low safety significance and because the issue has been entered into the licensee's corrective action program (CR 04-01632), the issue is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 05000440/ 2004007-01)**.

.2 Hot Weather Preparations

a. Inspection Scope

During the week of May 3 the inspectors reviewed the facility design and the licensee's procedures to verify that the turbine building chillers would remain functional when challenged by adverse weather conditions, such as high temperatures. Licensee experience with these chillers indicated they were susceptible to spurious shutdowns. Additionally, the inspectors reviewed the licensee's 2002 and 2003 summer seasonal readiness critiques to verify recommendations and corrective actions were implemented in a timely manner. Finally, the inspectors walked down selected areas to evaluate plant

equipment susceptible to high temperatures.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors conducted partial walkdowns of the system trains listed below to verify that the systems were correctly aligned to perform their designed safety function. The inspectors used licensee Valve Line-up Instructions (VLIs) and system drawings during the walkdowns. The walkdowns included selected switch and valve position checks, and verification of electrical power to critical components. Finally, the inspectors evaluated other elements, such as material condition, housekeeping, and component labeling. The documents used for the walkdowns are listed in the attached List of Documents Reviewed. The inspectors reviewed the following four systems:

- the Division 2 EDG and associated support systems during a Division 3 outage on April 6;
- reactor core isolation cooling (RCIC) system during a high pressure core spray (HPCS) outage on April 7;
- the Division 1 EDG and associated support systems during a Division 3 outage on April 7; and
- the 'A' and 'B' trains of the control complex chilled water system during a planned maintenance unavailability of the 'C' train during the week of April 26.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors walked down the following eight areas to assess the overall readiness of fire protection equipment and barriers:

- Fire Area CC-1, Control Complex 574';
- Fire Areas 1CC-4 and 2-CC4, Control Complex 638';
- Fire Areas 1CC-6 and 2-CC6, Control Complex 679'-6";
- Fire Zone 0IB-5, Intermediate Building 682';
- Fire Zone 0IB-4, Intermediate Building 654'-6" and 665';
- Fire Zone 0IB-3, Intermediate Building 620';
- Fire Zone 0IB-2, Intermediate Building 599'; and
- Fire Zone 0IB-1, Intermediate Building 574'.

Emphasis was placed on the control of transient combustibles and ignition sources, the material condition of fire protection equipment, and the material condition and operational status of fire barriers used to prevent fire damage or propagation.

The inspectors looked at fire hoses, sprinklers, and portable fire extinguishers to verify that they were installed at their designated locations, were in satisfactory physical condition, and were unobstructed. The inspectors also evaluated the physical location and condition of fire detection devices. Additionally, passive features such as fire doors, fire dampers, and mechanical and electrical penetration seals were inspected to verify that they were in good physical condition. The documents listed at the end of the report were used by the inspectors during the assessment of this area.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On May 4, the resident inspectors observed licensed operator performance in the plant simulator. The inspectors evaluated crew performance in the areas of:

- clarity and formality of communication;
- ability to take timely action in the safe direction;
- prioritizing, interpreting, and verifying alarms;
- correct use and implementation of procedures, including alarm response procedures;
- timely control board operation and manipulation, including high-risk operator actions; and,
- group dynamics.

The inspectors also observed the licensee's evaluation of crew performance to verify that the training staff had observed important performance deficiencies and specified appropriate remedial actions.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's evaluation of plant risk, scheduling, configuration control, and performance of maintenance associated with planned and emergent work activities to verify that scheduled and emergent work activities were adequately managed. In particular, the inspectors reviewed the licensee's program for conducting

maintenance risk assessments to verify that the licensee's planning, risk management tools, and the assessment and management of on-line and shutdown risk were adequate. The inspectors also reviewed licensee actions to address increased on-line and shutdown risk when equipment was out-of-service for maintenance, such as establishing compensatory actions, minimizing the duration of the activity, obtaining appropriate management approval, and informing appropriate plant staff, to verify that the actions were accomplished when on-line and shutdown risk was increased due to maintenance on risk-significant structures, systems, and components. The following five assessments and/or activities were reviewed:

- the maintenance risk assessment and work execution associated with a Division 3 outage during the week of April 5;
- the maintenance risk assessment for the week of April 19 which included planned outages of two offsite 345 kV lines and reactor protection system relay replacement;
- the maintenance risk assessment for the week of May 10 which included a planned unit 2 startup transformer outage;
- the management of on-line risk following the failure of the Division 1 ESW pump on May 21; and
- the shutdown safety assessment, work execution, and contingency actions associated with a planned "orange" risk profile due to ESW pump work during the May forced outage.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Non-Routine Evolutions and Events (71111.14)

.1 Establishment of Recirculation Flow Control Valves Hydraulic Lock

a. Inspection Scope

The inspectors observed and reviewed activities associated with the establishment of a hydraulic lock on the recirculation flow control valves on May 11. The inspectors observed procedure use, crew communications, and coordination of activities between work groups to ensure crew performance was consistent with the requirements of PYRM-POS-0001, "Perry Operations Section Expectations Handbook," Rev. 4.

b. Findings

No findings of significance were identified.

.2 Electrical Transient

a. Inspection Scope

On May 14 the licensee experienced a voltage transient due to an external electrical grid transient. The inspectors responded to the control room and reviewed licensee immediate and supplemental actions. Specifically, the inspectors verified the licensee's actions were consistent with operating instructions, alarm response instructions, and off-normal instructions (ONIs).

b. Findings

No findings of significance were identified.

.3 Seismic Activity

a. Inspection Scope

On June 30, the licensee experienced mild seismic activity. The control room received reports of noticeable activity from both on and offsite personnel. No alarms were received due to the seismic event. The inspectors reviewed licensee immediate and supplemental actions. Specifically, the inspectors verified the licensee's actions were consistent with emergency plan requirements and ONIs.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors evaluated the following post-maintenance testing (PMT) activities for risk-significant systems to assess the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written; and equipment was returned to its operational status following testing. The inspectors evaluated the activities against TSs, the USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications. In addition, the inspectors reviewed CRs associated with PMT to determine if the licensee was identifying problems and entering them in the corrective action program. The specific procedures and CRs reviewed are listed in the attached List of Documents Reviewed. The following six post-maintenance activities were reviewed:

- annulus exhaust gas treatment system flow verification following vortex vane adjustment on April 7;
- testing of valve 1M51F0020A following actuator replacement on April 3;

- testing of average power range monitor 'A' following replacement of an optical isolator on May 12;
- testing of the Division 1 ESW pump following pump replacement on May 25;
- testing of the Division 2 ESW pump following pump replacement on June 3; and
- testing of a feedwater temperature probe following replacement on May 24.

b. Findings

Introduction: A self-revealed finding of very low safety significance occurred on March 30 when the licensee improperly installed test equipment which subsequently damaged a valve in the combustible gas control system. Investigation revealed that the procedure in use and worker attention to detail were both less than adequate and contributed to damaging the valve. The installation resulted in over-stressing the valve operator and extending the time the plant was in a limiting condition for operation (LCO) by four days. Because procedure use was less than adequate, this issue was considered to be an NCV of TS 5.4. Licensee corrective actions included replacing the damaged portions of the valve and performing training.

Description: On March 30, the licensee installed a dead-man switch in the control circuitry for valve M51-F0020A, isolation for cooling water to the compressor. This switch allowed workers to take local control of the valve in order to position it as needed to collect data to verify valve performance. During performance of the installation, workers were distracted in the performance of the job by Gai-Tronics announcements calling for one of the workers. During the installation of the test equipment, the verifier discovered that the ammprobe leads were installed improperly. However, his verification failed to detect that the dead-man switch was also connected improperly in the circuit. Specifically, the errant installation both bypassed all interlocks in the control circuit such that the motor would not turn off once the valve was fully seated, and was connected to close the valve when the open button was pushed. When the workers tested the valve, the operation drove the valve fully into its seat and the motor drew enough current to blow the power fuses.

Analysis by engineering concluded that the stresses placed on the valve caused sufficient degradation to warrant replacement of the valve operator. With the work in progress, the one division of the combustible gas mixing system remained inoperable, requiring continued entry into Condition A of LCO 3.6.3.3. On April 4, the licensee declared the valve operable following completion of PMT.

Analysis: The inspectors determined that failure to properly install the dead-man switch, and the resulting damage to M51-F0020A during testing, was a performance deficiency warranting a significance determination. The inspectors determined the issue was more than minor because it was directly associated with the Mitigating System Cornerstone objective of mitigating system availability and operability. Specifically, operability of the combustible gas mixing system was delayed by four days. The finding also affected the cross-cutting area of Human Performance because the licensee's procedure and worker attention to detail were both less than adequate and contributed to damaging the valve.

Using IMC 0609, Appendix A, “Significance Determination of Reactor Inspection Findings for At-Power Situations,” the inspectors answered “no” to all five screening questions in the Phase 1 Screening Worksheet under the Mitigation Systems column. The inspectors therefore concluded that the issue was of very low safety significance.

Enforcement: Technical Specification 5.4 states, in part, that procedures shall be established, implemented, and maintained as recommended in Regulatory Guide 1.33. Regulatory Guide 1.33 recommended the establishment of procedures for performing maintenance that can affect the performance of safety-related equipment. Contrary to these requirements, the licensee failed to use procedures adequate for the performance of work. Specifically, Work Order 200001138 lacked sufficient detail to control installation of the dead-man switch and, as a result, the workers installed the switch improperly and damaged the valve. Because of the very low safety significance and because the issue has been entered into the licensee’s corrective action program (CR 04-01599), the issue is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 05000440/2004007-02)**.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

The inspectors observed activities associated with a forced outage initiated on May 22 following the failure of the Division 1 ESW pump. The forced outage continued through June 5 when the plant synchronized to the grid. The inspectors assessed the adequacy of forced outage-related activities, including implementation of risk management, conformance to approved site procedures, and compliance with TS requirements. The following major activities were observed or performed:

- On May 22 and 23, the inspectors observed the licensee’s shutdown and cooldown of the reactor. The inspectors observed shift briefings, operator performance, shift management coordination of plant activities, and conformance with TS requirements including cooldown limitations.

- From May 24 through June 3, the inspectors reviewed licensee restart readiness activities to verify emergent issues were appropriately identified as restart restraints and that restart restraint issues were appropriately resolved prior to mode changes.

- From May 23 through June 3, the inspectors reviewed licensee shutdown cooling configurations and contingency plans.

- On June 4, the inspectors observed the licensee’s reactor startup. The inspectors observed shift briefings, operator performance, shift management coordination of plant activities, and conformance with TS requirements including heat-up limitations and mode change requirements.

b. Findings

No findings of significance were identified. Inspection activities associated with the failure of the Division 1 ESW pump were completed as part of NRC Special Inspection, 05000440/2004011, which was chartered on May 21.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed surveillance testing or reviewed test data for risk-significant systems or components to assess compliance with TSs, 10 CFR Part 50, Appendix B, and licensee procedure requirements. The testing was also evaluated for consistency with the USAR. The inspectors verified that the testing demonstrated that the systems were ready to perform their intended safety functions. The inspectors reviewed whether test control was properly coordinated with the control room and performed in the sequence specified in the surveillance instruction (SVI), and if test equipment was properly calibrated and installed to support the surveillance tests. The procedures reviewed are listed in the attached List of Documents Reviewed. The six surveillance activities assessed were:

- testing and periodic maintenance of Division 3 switchgear during the week of April 5;
- standby liquid control system pump and valve operability testing conducted April 28;
- combustible gas mixing system operability testing conducted April 29;
- average power range monitor calibration and gain adjustment conducted May 14;
- operability testing of the ESW sluice gate inflatable seals check valve conducted June 23; and
- monthly run of the Division 2 EDG conducted June 24.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Review of Licensee Performance Indicators for the Occupational Exposure Cornerstone

a. Inspection Scope

The inspectors discussed performance indicators (PIs) with the radiation protection (RP) staff and reviewed data from the licensee's corrective action program to determine if there were any PIs in the occupational exposure cornerstone that had not been reviewed. There were none. This review represented one sample.

b. Findings

No findings of significance were identified.

.2 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors identified three radiologically significant work areas within high radiation and airborne radioactivity areas in the plant. Radiation work permits (RWPs) and work packages, which included associated licensee controls and surveys of these areas, were reviewed to determine if radiological controls including surveys (including air sampling data), postings, and barricades were acceptable. This review represented one sample.

These radiologically significant work areas were walked down (perimeters were walked down for airborne radioactivity areas) and surveyed using an NRC survey meter. This was done to verify that the prescribed RWPs, procedures, and engineering controls were in place; that licensee surveys and postings were complete and accurate; and that air samplers were properly located. This review represented one sample.

The inspectors reviewed the RWPs and associated work packages used to access these high radiation and airborne radioactivity work areas and identified the work control instructions and control barriers that had been specified. Technical Specification high radiation area (HRA) and locked HRA requirements were used as standards for the necessary barriers. Electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. Workers were interviewed to verify that they were aware of the actions required when their electronic dosimeters noticeably malfunctioned or alarmed. The inspectors reviewed the RWP and air sample surveys for an airborne radioactivity area in which work was to be performed. This area had the potential for individual worker internal exposures of >50 millirem committed effective dose equivalent without respiratory protection; however, respirators were to be used for this job. Barrier integrity and engineering controls performance, such as high efficiency particulate filtration ventilation system operation and respirator use were evaluated. This review represented one sample.

The inspectors reviewed site records to determine if there were airborne radioactivity areas in the plant with a potential for individual worker internal exposures of >50 millirem committed effective dose equivalent. Barrier integrity and engineering controls performance, such as high efficiency particulate filtration ventilation system operation, were evaluated. Work areas having a history of, or the potential for, airborne transuranics were evaluated to verify that the licensee had considered the potential for transuranic isotopes and provided appropriate worker protection. This review represented one sample.

The adequacy of the licensee's internal dose assessment process for internal exposures >50 millirem committed effective dose equivalent was assessed to verify that affected

personnel were properly monitored utilizing calibrated equipment and that the data was analyzed and internal exposures were properly assessed in accordance with licensee procedures. This review represented one sample.

The inspectors reviewed the licensee's physical and programmatic controls for highly activated and/or contaminated materials (non-fuel) stored within the spent fuel pool. This review represented one sample.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed self-assessments, audits and CRs related to the access control program since the last inspection in order to verify that identified problems were entered into the corrective action program for resolution. This review represented one sample.

Corrective action reports related to access controls and any available HRA radiological incidents (non-PIs identified by the licensee in HRAs <1Rem/hr) were reviewed. Staff members were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- initial problem identification, characterization, and tracking;
- disposition of operability/reportability issues;
- evaluation of safety significance/risk and priority for resolution;
- identification of repetitive problems;
- identification of contributing causes;
- identification and implementation of effective corrective actions;
- resolution of NCVs tracked in the corrective action system; and
- implementation/consideration of risk-significant operational experience feedback.

This review represented one sample.

The inspectors evaluated the licensee's process for problem identification, characterization, prioritization, and verified that problems were entered into the corrective action program and resolved. For repetitive deficiencies and/or significant individual deficiencies identified in the problem identification and resolution process, the inspectors verified that the licensee's self-assessment activities also identified and addressed these deficiencies. This review represented one sample.

The inspectors discussed PIs with the RP staff and reviewed data from the licensee's corrective action program to determine if there were any PIs for the occupational exposure cornerstone that had not been reviewed. There were none. This review represented one sample.

b. Findings

No findings of significance were identified.

.4 Job-In-Progress Reviews

a. Inspection Scope

The inspectors identified three jobs that were being performed in HRAs, locked high radiation and airborne radioactivity areas in order to observe work activities that presented the greatest radiological risk to workers and could result in a high collective dose or internal exposures. The inspectors reviewed radiological job requirements including RWP and work procedure requirements, and attended as-low-as-is-reasonably-achievable (ALARA) job briefings. Job performance was observed with respect to these requirements to verify that radiological conditions in the work area were adequately communicated to workers through pre-job briefings and postings. This review represented one sample.

The inspectors also verified the adequacy of radiological controls and RP job coverage. This included required radiation, contamination, and airborne radioactivity surveys for system breaches along with audio and visual surveillance for remote job coverage, and contamination controls. This review represented one sample.

The inspectors observed work in a HRA (resin transfer) having significant dose rate gradients and reviewed the application of dosimetry to effectively monitor exposure to workers. The use of multiple dosimeters and enhanced job controls including remote video monitoring and teledosimetry was observed and evaluated to verify that the radiological controls for worker protection were adequate. This review represented one sample.

b. Findings

No findings of significance were identified.

.5 High Risk-Significant, High Dose Rate, High Radiation Area and Very High Radiation Area Controls

a. Inspection Scope

The inspectors reviewed the licensee's PIs for high risk, high dose rate and HRAs, and for all very high radiation areas (VHRAs) to verify that workers were adequately protected from radiological overexposure. Discussions were held with the RP manager concerning high dose rate/HRA and VHRA controls and procedures, including procedural changes that had occurred since the last inspection. This was done in order to verify that procedure modifications did not substantially reduce the effectiveness and level of worker protection. This review represented one sample.

During plant walkdowns, the posting and locking of entrances to high dose rate HRAs, and VHRAs were reviewed for adequacy. This review represented one sample.

The inspectors evaluated the controls that were in place for special areas that had the potential to become VHRAs during certain plant operations. Discussions were held with RP supervisors to determine how the required communications between the RP group and other involved groups would occur beforehand in order to allow corresponding timely actions to properly post and control the radiation hazards. This review represented one sample.

b. Findings

No findings of significance were identified.

.6 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated RP work requirements and evaluated whether workers were aware of the significant radiological conditions in their workplace, the RWP controls and limits in place, and that their performance had accounted for the level of radiological hazards present. This review represented one sample.

Radiological problem reports, which found that the cause of an event resulted from radiation worker errors, were reviewed to determine if there was an observable pattern traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. These problems, along with planned and taken corrective actions were discussed with the RP Manager. This review represented one sample.

b. Findings

No findings of significance were identified.

.7 Radiation Protection Technician Proficiency

a. Inspection Scope

The inspectors observed and evaluated RP technician (RPT) performance with respect to RP work requirements. This was done to evaluate whether the technicians were aware of the radiological conditions in their workplace, the RWP controls and limits in place, and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities. This review represented one sample.

Radiological problem reports, which found that the cause of an event was RPT error, were reviewed to determine if there was an observable pattern traceable to a similar

cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. This review represented one sample.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the most current Radiological Effluent Release Report to verify that the program was implemented as described in the Radiological Environmental Technical Specifications/Offsite Dose Calculation Manual (RETS/ODCM) and the Updated Final Safety Analysis Report (UFSAR). The effluent report was also evaluated to determine if there were any significant changes to the ODCM or to the radioactive waste system design and operation. The inspectors verified that any changes to the ODCM were technically justified, documented, and made in accordance with Regulatory Guide 1.109 and NUREG-0133. Modifications (if any) made to the radioactive waste system design and operation were evaluated to determine if these alterations changed the dose consequence to the public. The inspectors also verified that technical and/or 10 CFR 50.59 reviews were performed when required, and determined whether radioactive liquid and gaseous effluent radiation monitor set point calculation methodology had changed since completion of the modifications. The inspectors evaluated the effluent report for any anomalous results and verified that any such results were adequately resolved.

The RETS/ODCM and UFSAR were reviewed to identify the effluent radiation monitoring systems and associated flow measurement devices. Licensee records including self-assessments, audits, and licensee event reports (LERs) were reviewed to determine if there were any radiological effluent PI occurrences or any unanticipated offsite releases of radioactive material for follow-up. The UFSAR description of all radioactive waste systems was reviewed. This review represented one sample.

b. Findings

No findings of significance were identified.

.2 Onsite Inspection

a. Inspection Scope

The inspectors walked down the major components of the gaseous and liquid release systems, including radiation and flow monitors, demineralizers, filters, tanks, and vessels. This was done to observe current system configuration with respect to the description in the UFSAR, ongoing activities, and equipment material condition. This review represented one sample.

The inspectors observed the routine processing (including sample collection and analysis) of radioactive liquid waste to verify that appropriate treatment equipment was used and that radioactive liquid waste was processed in accordance with procedural requirements. Liquid effluent release packages including projected doses to the public were reviewed to ensure that regulatory effluent release limits were not exceeded. The inspectors walked down the radioactive gaseous effluent processing equipment to verify that appropriate treatment equipment was used and that the radioactive gaseous effluent was processed and released in accordance with RETS/ODCM requirements. Radioactive gaseous effluent release data including the projected doses to members of the public was evaluated to ensure that regulatory effluent release limits were not exceeded. This review represented one sample.

The inspectors reviewed records of abnormal releases or releases made with inoperable effluent radiation monitors. The licensee's actions for these types of releases were evaluated to verify that adequate compensatory sampling and analyses were performed, and to ensure that an adequate defense-in-depth was maintained against an unmonitored, unanticipated release of radioactive material to the environment. This included projected radiological doses to members of the public. This review represented one sample.

The inspectors reviewed the licensee's technical justifications for changes made to the ODCM as well as to the liquid or gaseous radioactive waste system design, procedures, or operation since the last inspection. This was done to determine whether the changes affected the licensee's ability to maintain effluents ALARA and whether changes made to monitoring instrumentation resulted in a non-representative monitoring of effluents. The inspectors also reviewed the licensee's offsite dose calculations and evaluated any significant changes in dose values reported in the annual report from those values reported the previous year. This included a review of the verification of the offsite dose calculation software. This review represented one sample.

The inspectors reviewed a selection of monthly, quarterly, and annual dose calculations to ensure that the licensee properly calculated the offsite dose from radiological effluent releases and to determine if any annual RETS/ODCM (i.e., Appendix I to 10 CFR Part 50 values) were exceeded. This review represented one sample.

The inspectors reviewed air cleaning system surveillance test results to ensure that the system was operating within the licensee's acceptance criteria. The inspectors reviewed surveillance test results or methodology the licensee used to determine the

stack and vent flow rates. The inspectors verified that the flow rates were consistent with RETS/ODCM or UFSAR values. This review represented one sample.

The inspectors reviewed records of instrument calibrations performed since the last inspection for each point of discharge effluent radiation monitor and flow measurement device and reviewed any completed system modifications and the current effluent radiation monitor alarm set point values for agreement with RETS/ODCM requirements. The inspectors also reviewed calibration records of radiation measurement (i.e., counting room) instrumentation associated with effluent monitoring and release activities, along with the quality control records for the radiation measurement instruments. This review represented one sample.

The inspectors reviewed the results of the interlaboratory comparison program to verify the quality of radioactive effluent sample analyses performed by the licensee. The inspectors reviewed the licensee's quality control evaluation of the interlaboratory comparison test results and associated corrective actions for any deficiencies identified. In addition, the inspectors reviewed the results from the licensee's quality assurance audits to determine whether the licensee met the requirements of the RETS/ODCM. This review represented one sample.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, LERs, and special reports related to the radioactive effluent treatment and monitoring program since the last inspection to determine if identified problems were entered into the corrective action program for resolution. The inspectors also verified that the licensee's self-assessment program identified and addressed repetitive deficiencies or significant individual deficiencies that were identified in problem identification and resolution.

The inspectors also reviewed corrective action reports from the radioactive effluent treatment and monitoring program, interviewed staff, and reviewed documents to determine if the following activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

- initial problem identification, characterization, and tracking;
- disposition of operability/reportability issues;
- evaluation of safety significance/risk and priority for resolution;
- identification of repetitive problems;
- identification of contributing causes;
- identification and implementation of effective corrective actions;
- resolution of NCVs tracked in the corrective action system; and
- implementation/consideration of risk-significant operational experience feedback.

This review represented one sample.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation (71122.02)

.1 Shipment Preparation

a. Inspection Scope

The inspectors reviewed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness for a shipment of spent reactor water cleanup resin. The inspectors verified that the requirements of the transport cask Certificate of Compliance were met and verified that the receiving licensee was authorized to receive the shipment packages. The inspectors verified that the licensee's procedures for cask loading and closure procedures were consistent with the vendor's approved procedures. The inspectors observed radiation worker practices to verify that the workers had adequate skills to accomplish each task and to determine if the shippers were knowledgeable of the shipping regulations and whether shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to NRC Bulletin 79-19 and 49 CFR Part 172 Subpart H. This review represented one sample.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program (REMP) and Radioactive Material Control Program (71122.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the most current Annual Environmental Monitoring Report and licensee assessment results to verify that the REMP was implemented as required by the RETS and the ODCM. The inspectors reviewed the report for changes to the ODCM with respect to environmental monitoring, and commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, interlaboratory comparison program, and data analysis. The inspectors reviewed the ODCM to identify environmental monitoring stations and reviewed licensee self-assessments, audits, LERs, and interlaboratory comparison program results. The inspectors reviewed the UFSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation. The inspectors also reviewed the scope of the licensee's audit program to verify that it met the requirements of 10 CFR 20.1101(c). This review represented one sample.

b. Findings

No findings of significance were identified.

.2 Onsite Inspection

a. Inspection Scope

The inspectors walked down seven of the air sampling stations (> 30 percent) and approximately 14 percent of the thermoluminescent dosimeter monitoring stations to determine whether they were located as described in the ODCM and to determine the equipment material condition. This review represented one sample.

The inspectors observed the collection and preparation of a variety of environmental samples including ground and surface water, air and fish, and verified that environmental sampling was representative of the release pathways as specified in the ODCM and that sampling techniques were in accordance with procedures. This review represented one sample.

The inspectors verified that the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the annual report, NRC Safety Guide 23, and licensee procedures. The inspectors verified that the meteorological data readout and recording instruments including computer interfaces and data loggers at the tower were operable and that readouts of wind speed, wind direction, delta temperature, and atmospheric stability measurements were available on the licensee's computer system, which was available in the Control Room, and that the system was operable. This represents one sample.

The inspectors reviewed each event documented in the Annual Environmental Monitoring Report which involved missed samples, inoperable samplers, lost thermoluminescent dosimeters, or anomalous measurements for the cause and corrective actions. The licensee's assessment of positive sample results (i.e., licensed radioactive material detected above the lower limits of detection) was reviewed. The inspectors reviewed the associated radioactive effluent release data that was the likely source of the released material. This review represented one sample.

The inspectors reviewed significant changes made by the licensee to the ODCM as the result of land use census modifications or sampling station changes since the last inspection, and the technical justifications for changed sampling locations. The inspectors verified that the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment. This review represented one sample.

The inspectors reviewed the calibration and maintenance records for five air samplers. There were no calibrations for composite water samplers. The inspectors reviewed calibration records for radiation measurement (counting room) instrumentation that could be used for environmental sample analysis and verified that the appropriate detection sensitivities would be utilized for counting samples, in that the instrumentation could achieve the RETS/ODCM required environmental lower level of detection. The

inspectors reviewed quality control data used to monitor radiation measurement instrument performance, and actions taken for degrading detector performance.

The inspectors reviewed a licensee audit of the vendor laboratory that analyzed the licensee's REMP samples. Corrective actions for deficiencies identified in the audit were reviewed along with the vendor's interlaboratory comparison program to verify the adequacy of the vendor's analytical and quality assurance programs.

The inspectors also evaluated the results of the licensee's interlaboratory comparison program to verify the adequacy of sample analyses performed by the licensee and the quality assurance organization's evaluation of the intercomparison program including corrective actions for deficiencies. The inspectors reviewed the licensee's evaluation of bias in the data and the overall effect on the REMP. The inspectors reviewed quality assurance audit results of the program to determine whether the licensee met the TS/ODCM requirements. This review represented one sample.

b. Findings

No findings of significance were identified.

.3 Unrestricted Release of Material from the Radiologically Restricted Area (RRA)

a. Inspection Scope

The inspectors observed several locations where the licensee monitored potentially contaminated material leaving the RRA, and inspected the methods used for control, survey, and release of material from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use to verify that the work was performed in accordance with plant procedures. This review represented one sample.

The inspectors verified that the radiation monitoring instrumentation was appropriate for the radiation types present and was calibrated with appropriate radiation sources that represented the expected isotopic mix. The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material and verified that there was guidance on how to respond to an alarm indicating the presence of licensed radioactive material. The inspectors reviewed the licensee's equipment to ensure that radiation detection sensitivities were consistent with the NRC guidance contained in IE Circular 81-07 and IE Information Notice 85-92 for surface contamination and HPPOS-221 for volumetrically contaminated material. The inspectors verified that the licensee performed radiation surveys to detect radionuclides that decay via electron capture.

The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters such as counting times and background radiation levels. The inspectors verified that the licensee had not established a "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high radiation background area. This review represented one sample.

b. Findings

No findings of significance were identified.

.4 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, LERs, and special reports related to the REMP since the last REMP inspection to determine if identified problems were entered into the corrective action program for resolution. The inspectors also verified that the licensee's self-assessment program was capable of identifying and addressing repetitive deficiencies or significant individual deficiencies that were identified by the problem identification and resolution process.

The inspectors also reviewed corrective action reports from the REMP that affected environmental sampling and analysis, and meteorological monitoring instrumentation. Staff members were interviewed and documents were reviewed to determine if the following activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

- initial problem identification, characterization, and tracking;
- disposition of operability/reportability issues;
- evaluation of safety significance/risk and priority for resolution;
- identification of repetitive problems;
- identification of contributing causes;
- identification and implementation of effective corrective actions;
- resolution of NCVs tracked in the corrective action system; and
- implementation/consideration of risk-significant operational experience feedback.

This review represented one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed reported first quarter 2004 data for unplanned power changes and RCIC system unavailability PIs using the definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revision 2. The inspectors reviewed station logs, event notification reports, LERs, CRs, and TS logs to verify the accuracy of the licensee's data submission.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors reviewed licensee system health reports; binning reports; trending reports; quality assurance assessment reports; PIs; maintenance rule assessments; and corrective action backlog lists to identify trends that might have indicated the existence of a more significant safety issue which may have been documented outside of the normal corrective action program.

b. Findings

No findings of significance were identified.

.3 Annual Sample Review - Divisional Outage Management

a. Inspection Scope

During routine plant status activities, the inspectors noted a large number of CRs associated with a Division 3 outage. Because of the large number of CRs, the inspectors reviewed the CRs to determine if significant issues existed with the licensee's planning and execution of on-line divisional outages. As part of the inspection, the inspectors reviewed the licensees's critiques of prior outages.

b. Findings and Observations

Introduction: A self-revealed violation of TS 5.4 occurred on April 10 when the licensee unintentionally air-rolled the EDG following replacement of a timing relay. An investigation by the licensee revealed that the test method specified in the procedure

actuated the air-start circuit but did not include steps to prevent air-roll of the EDG. This issue was considered to be of very low safety significance. Licensee corrective actions included conducting training for operations and planning personnel on appropriate controls during work activities.

Description: On April 10, the licensee replaced a timing relay in the start circuitry of the EDG. As part of the PMT for the relay replacement, the licensee energized portions of the circuitry. The PMT did not include provisions to inhibit air-start of the EDG nor did it require verification that the EDG could be safely air-rolled. When the licencee inserted the synthetic start signal, the air-start initiated and rolled the EDG. A start did not occur due to out-of-service clearance tags in place to prevent an EDG start. The relay replacement occurred during a planned Division 3 outage which included numerous work activities on the Division 3 EDG. Review of other work conducted during the outage indicated that during those periods when an air-roll could have damaged the diesel, e.g. when the lube oil system was drained, clearance tags were in place to prohibit air-roll of the diesel. However, the work package for the relay replacement did not include links to these clearance tag-outs.

Analysis: The inspectors determined that the failure to adequately establish and control PMT of the EDG was a performance deficiency warranting a significance determination. The inspectors concluded that the finding was more than minor in accordance with IMC 0612. Inspectors concluded that the finding could reasonably be viewed as a precursor to a more significant event because the air-roll was not anticipated by the licensee. This finding also affected the cross-cutting area of Human Performance because the licensee's development of the PMT failed to either inhibit air-roll of the EDG or verify the EDG could be safely air-rolled.

The inspectors completed a significance determination of this issue using IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The inspectors answered "no" to all questions in the Mitigation Systems column of the Phase 1 Screening Worksheet because no safety-related mitigation systems were affected by the issue. The inspectors therefore concluded that the issue was of very low safety significance.

Enforcement: Technical Specification 5.4 states, in part, that procedures shall be established, implemented, and maintained as recommended in Regulatory Guide 1.33. Regulatory Guide 1.33 recommended the establishment of procedures for performing maintenance that can affect the performance of safety-related equipment. Contrary to these requirements, the licensee failed to include in procedures requirements to protect the EDG from damage during this PMT. Because of the very low safety significance and because the issue has been entered into the licensee's corrective action program (CR 04-01857), the issue is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 05000440/2004007-03)**.

Other Observations: The inspectors reviewed the system outage report for the RCIC outage conducted the week of January 27. The inspectors noted that this report identified numerous issues surrounding poor and late planning for the outage. The CRs for the Division 3 outage indicated similar problems. For example:

- Work on breaker EH1301, diesel generator supply to the emergency diesel bus, did not include installation of the racking extension for the breaker. This resulted in a delay of 30 minutes to remove the racking extension from the old breaker and install it on the new breaker. Subsequently, the licensee racked the breaker out again to verify the manufacturer provided extension was not left in the breaker

- During PMT of the installation of the Division 3 auxiliary fan, the exhaust damper did not close on simulated CO_2 initiation. Subsequent troubleshooting identified that the new relays had a manufacturing defect that was not detected due to omission of a pre-installation test.

- During a test the Division 3 EDG did not start. The licensee determined that system response was as-designed since the EDG breaker was not fully racked in.

- During the outage, restoration of the Division 3 ESW and supported equipment was delayed for about 17 hours due to lower flow than expected. As part of the outage, the licensee installed a new ESW pump. Prior to shipment, the manufacturer tested the pump and achieved results consistent with the existing pump. While preparing procedures for pump operation, the licensee consulted with the vendor and based on the consultation, adjusted pump lift to a larger value than the one used during testing. The licensee subsequently attributed the reduction in pump flow to the change in lift setting. In order to improve pump flow, the licensee intended to adjust the lift in a future outage.

- After the outage, the licensee determined that they were within three hours of the green/white threshold for safety system unavailability for the HPCS system. Without delays in restoration of HPCS, the licensee would have had 20 hours of system unavailability before crossing the threshold. The inspectors were particularly concerned that the knowledge of the proximity to the PI threshold was not well known by licensee management.

These examples indicate weakness in divisional outage planning activities and covered a spectrum of areas including work package planning, engineering preparations, and safety system availability management.

4OA3 Event Followup (71153)

.1 (Closed) LER 05000440/2003-004-00: Emergency Service Water Pump Upper Shaft Coupling Sleeve Failure.

On September 1, 2003, the Division 1 ESW pump was declared inoperable due to the failure of the upper shaft coupling sleeve. Because of the time required to obtain replacement parts and perform repairs, the licensee requested a Notice of Enforcement Discretion (NOED) for TS 3.7.1, Emergency Service Water (ESW) System - Divisions 1 and 2, and TS 3.8.1, AC Sources - Operating. The NRC approved the NOED. The pump was repaired and declared operable on September 5, 2003. Review of the licensee's root cause evaluation, extent of condition review, and corrective actions were completed as part of NRC Supplemental Inspection, 05000440/2004008. Inspector review of the September 1, 2003, pump failure, including preliminary significance

determination was documented in NRC Integrated Inspection Report 05000440/2003006. Following completion of a licensee requested Regulatory Conference, the NRC's final significance determination was issued on January 28, 2004, and was documented in NRC Inspection Report 05000440/2004005. The NRC's final determination was that the pump failure was an issue of low to moderate safety significance (White) (**VIO 05000440/2004005-01**). Inspector review of the LER did not identify any new information. This LER is closed.

.2 (Closed) LER 05000440/2003-004-01: Emergency Service Water Pump Upper Shaft Coupling Sleeve Failure.

The licensee submitted this LER as a revision to LER 05000440/2003-004-00 to update and align risk information contained in the LER with a risk analysis submitted to the NRC on December 23, 2003. The information was also discussed with the NRC during a Regulatory Conference held December 17, 2003. As documented in NRC Inspection Report 05000440/2004005, the NRC reviewed the licensee's revised risk analysis but concluded the information was not compelling enough to change the preliminary safety determination. The NRC's final determination was that the pump failure was an issue of low to moderate safety significance (White) (**VIO 05000440/2004005-01**). Inspector review of the LER did not identify any new information. This LER is closed.

.3 (Closed) LER 05000440/2003-005-00: Technical Specification Violation/Loss of Safety Function Due to Air Bound Waterleg Pump.

On August 14, 2003, the Perry Nuclear Power Plant scrammed as a result of a loss of offsite power (LOOP). During the recovery from the LOOP, an anomalous condition occurred which involved air binding of the Division 1 waterleg pump which was designed to keep the discharge lines of the residual heat removal (RHR) 'A' and low pressure core spray (LPCS) systems full. As a result of the air binding, both the RHR 'A' and LPCS systems became inoperable until the pump was vented.

On September 11, 2003, the licensee identified that the Division 1 feedwater leakage control system (FWLCS) piping and LPCS to RHR 'A' crossover piping contained air. The licensee subsequently determined that sufficient air had accumulated in the FWLCS piping such that the Division 1 FWLCS would not have performed its function and that, following a LOOP, the RHR 'A' system would not have performed its suppression pool cooling function. The air accumulation was identified as part of the licensee's root cause evaluation of the August 14, 2003, LOOP event. The licensee determined the condition has existed since initial plant operation. Since the FWLCS and RHR 'A' suppression pool cooling mode were therefore inoperable longer than permitted by TS, the condition was reportable as a condition prohibited by TS. Additionally, since redundant Division 2 FWLCS and RHR 'B' equipment had been inoperable for planned maintenance on several occasions throughout plant life, the condition was also reportable as a condition that could have prevented the fulfillment of a safety function.

Review of the licensee's response to the August 14, 2003, waterleg pump air binding was performed as an NRC Special Inspection, the results of which were documented in NRC Special Inspection, 05000440/2003009. Review of the licensee's root cause

evaluation, extent of condition review, and corrective actions were completed as part of NRC Supplemental Inspection, 05000440/2004008. Additional inspector review of the pump air binding, including preliminary significance determination was documented in NRC Integrated Inspection Report 05000440/2003010. The NRC's final significance determination was issued on March 12, 2004, and was documented in NRC Inspection Report 05000440/2004006. The NRC's final determination was that the pump failure was an issue of low to moderate safety significance (White) (**VIO 05000440/2004006-01**). Although inspector review of this LER did not identify any new information, the inspectors noted that the LER did not reflect the licensee's revised root cause evaluation. Specifically, the revised root cause more clearly delineated inadequate site venting procedures as a root cause as opposed to a contributing cause. The licensee informed the inspectors that an LER supplement would be submitted to reflect the revised root cause. This LER is closed.

4OA4 Cross-Cutting Aspects of Findings

.1 A finding described in Section 1R01.1 of this report had, as its primary cause, a Human Performance deficiency in that the licensee failed to follow procedures following identification of an impaired tornado barrier. As a result, a degraded condition existed without the establishment of appropriate compensatory actions.

.2 A finding described in Section 1R19 of this report had, as its primary cause, a Human Performance deficiency in that the licensee improperly installed a test switch into a system. This caused a valve to operate in an unintended direction and interlocks to stop the valve movement to be bypassed. This Human Performance deficiency resulted in damage to the valve and the extension of inoperability of the combustible gas mixing system.

.3 A finding described in Section 4OA3 of this report had, as its primary cause, a Human Performance deficiency in that the licensee failed to understand the effects of a post-maintenance test and inadvertently air-rolled a EDG.

4OA5 Other Activities

.1 Review of Institute of Nuclear Power Operations Report

The inspectors completed a review of the interim report for the Institute of Nuclear Power Operations April 2004 Evaluation, dated June 15, 2004.

.2 Temporary Instruction (TI) 2515/156, Offsite Power System Operational Readiness

a. Scope

The inspectors performed data gathering in selected areas to support the operational readiness review of offsite power (OSP) systems in response to TI 2515/156, Offsite Power System Operational Readiness. Data was gathered to support the requirement in Appendix A to 10 CFR Part 50, General Design Criterion 17, Electrical Power Systems, to minimize the likelihood of losing OSP on loss of the generating unit. Data

was gathered to support the requirement in Appendix B to 10 CFR Part 50, Criterion III, Design Control to confirm the design interface between the nuclear power plant and the regional transmission operator and Criterion XVI, Corrective Actions, to confirm the assessment of the industry operating experience from the August 14, 2003, grid event. Data was gathered to support the requirement in plant TSs for determining the operability of the OSP. Data was gathered to support the assumptions used to address requirements in 10 CFR 50.63, Loss of All Alternating Current Power, to determine an acceptable coping time. Data was gathered to support the requirement in 10 CFR 50.65, Assessing the Effectiveness of Maintenance, Section 50.65(a)(4) to assess the risk associated with performing work on the OSP or the emergency onsite power systems.

b. Observations and Findings

No findings of significance were identified. Based on the inspection, no immediate operability issues were identified. In accordance with TI 2515/156 reporting requirements, the inspectors provided the required data in the worksheets provided with the TI to the headquarters staff for further analysis. The responses to the "key " questions to assess the power plant operational readiness for summer of 2004 are shown below.

The inspectors identified that the licensee had a contractual agreement in place with the grid operator that stipulated voltage requirements and start-up load for the plant. In the event of potential grid problems, grid operator procedures required the grid operator to notify the plant.

The grid operator uses a computer program to model the grid and predict the effects of the loss of a power plant on grid stability including voltage. The program updates the analysis every five minutes. In addition, the plant and grid operator coordinated activities in the switchyard and those that were risk-significant in a LOOP. During activities where switchyard work increased plant risk, the licensee protected risk-significant equipment to mitigate the increase in risk. The inspectors reviewed the licensee's actions related to the evaluation of grid conditions with respect to maintenance rule evaluations. Current grid stability was not factored into (a)(4) analysis, but planned outages were scheduled when grid demand has historically been low. The licensee had included the plant specific LOOP into their risk model and intended to include generic changes to risk when industry consensus data is available. The licensee entered the LOOP into the corrective action program immediately.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. L. Myers, Chief Operating Officer and Interim Site Vice President, and other members of licensee management at the conclusion of the inspection on July 8. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. All proprietary information reviewed by the inspectors, was properly marked, and properly returned to the licensee. No proprietary information was discussed during the exit

meeting.

.2 Interim Exit Meetings

An interim exit meeting was conducted for access control to radiologically significant areas, radioactive gaseous and liquid effluent treatment and monitoring systems, and radioactive material processing and transportation with Mr. R. Coad on April 2, 2004.

.3 Interim Exit Meetings

An interim exit meeting was conducted for access control to radiologically significant areas, and the radiological environmental monitoring program and radioactive material control programs with Mr. J. Messina on June 24 and with Mr. W. Kanda on June 25, 2004.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

Cornerstone: Barrier Integrity

The licensee identified a violation of the license due to exceeding licensed thermal power following replacement of a feedwater temperature probe. During routine review of the work package, the system engineer identified that the temperature transmitter was not replaced with the probe as required. The failure resulted in erroneous thermal power calculations by the heat balance computer program and operation of the plant in excess of licensed power limits by less than 1.7 MW for several hours on both June 14 and June 15. The licensee has included the violation in their corrective action program as CR 04-03145. The inspectors concluded that it was not of more than very low safety significance because it was related to fuel barrier integrity which screens as green.

Cornerstone: Occupational Radiation Safety

Technical Specification 5.4.1 states, in part, that written procedures shall be established, implemented and maintained as recommended in Regulatory Guide 1.33. Regulatory Guide 1.33 recommended the establishment of procedures for the plant RP program. Health Physics Instruction, HPI-C005, Revision 14, Section 6.4.5.1 states, “Ensure General RWPs require radiological briefings for entry into HRAs.”

RWP 040002, Revision 0, allows entry into HRAs and states that a RP brief is required for all activities on the RWP.

On May 15, 2004, a non-licensed operator (NLO) entered three HRAs without receiving a brief as required by site procedures, while performing routine rounds. When he arrived at the control point the RPT was not at the desk and could not be found. On weekends and off hours, the RPT is not required to remain at the control point. The

NLO reviewed surveys and signed in on the correct RWP. During the tour, the NLO entered three HRAs. When he returned to the control point to exit the RRA, he set off the personnel contamination monitor alarms. This alerted the RPT who returned to the control point to assist the NLO. At this time, the RPT became aware that the NLO had transited HRAs without the required brief. Subsequent investigation by the licensee revealed the NLO was aware of the briefing requirements prior to entry into a HRA. The NLO received approximately 2 millirem during the tour which is typical of NLO tours. The licensee entered this issue into the corrective action program in condition report CR 04-02487. This finding was of very low safety significance because there was no radiological exposure consequence to the individual.

ATTACHMENT: SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

L. Myers, Chief Operating Officer
W. Kanda, Vice President-Nuclear
F. von Ahn, General Manager, Nuclear Power Plant Department
R. Coad, Radiation Protection Manager
R. Farrell, Radiation Protection Manager
V. Higaki, Manager, Regulatory Affairs
T. Lentz, Director, Nuclear Engineering
R. Strohl, Superintendent, Plant Operations

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000440/2004007-01	NCV	Failure to Disposition Identified Impaired Tornado Barriers (71111.01)
05000440/2004007-02	NCV	Improperly Installed Test Equipment Damages Valve in Combustible Gas Control System (71111.19)
05000440/2004007-03	NCV	Unintentional Air-Roll of the Emergency Diesel Generator (4AO2.3)

Closed

05000440/2004007-01	NCV	Failure to Disposition Identified Impaired Tornado Barriers (71111.01)
05000440/2004007-02	NCV	Improperly Installed Test Equipment Damages Valve in Combustible Gas Control System (71111.19)
05000440/2004007-03	NCV	Unintentional Air-Roll of the Emergency Diesel Generator (4AO2.3)
05000440/2003-004-00	LER	Emergency Service Water Pump Upper Shaft Coupling Sleeve Failure (4OA3.1)
05000440/2003-004-01	LER	Emergency Service Water Pump Upper Shaft Coupling Sleeve Failure (4OA3.2)
05000440/2003-005-00	LER	Technical Specification Violation/Loss of Safety Function Due to Air Bound Waterleg Pump (4OA3.3)

Discussed

05000440/2004005-01	VIO	Improper Maintenance Causes Emergency Service Water Pump Failure (4OA3.1)
05000440/2004006-01	VIO	Inadequate LPCS/RHR 'A' Fill and Vent Procedures Results in System Inoperability After Loss of Offsite Power (4OA3.3)

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portion of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1REP Equipment Availability and Functional Capability

CR 04-01996; EQ Life of the Installed MSIV Actuators Exceeded; dated April 19, 2004

Calculation EQ-089; EPDM Qualified Life in MSIV Actuators; dated February 8, 1990

Environmental Qualification Report Book No. S05A; MSIV Actuators; dated October 9, 1987

CR 04-02069; Calc M25-000 Cooling Loads Post-Accident Exceeds the M25 Cooling Coil Capacity; dated April 21, 2004

Calc. M25-000; Control Room Heat Load Calculation- M25- HVAC System; Rev. 0

SDM M25/26; Control Room HVAC; Rev. 5

SOI-M29; Control and Computer Rooms Humidification System; Rev. 4

CR 04-01588; Trending For Reactor Vessel Transients; dated March 29, 2004

FTI-F0002; Vessel Cyclic Duty Monitoring; Rev. 2

FTI-F0002; Attachment 2; Reactor Vessel Transient Data Accumulation; Cycle 9-1

FTI-F0002; Attachment 2; Reactor Vessel Transient Data Accumulation; Cycle 9-2

FTI-F0002; Attachment 2; Reactor Vessel Transient Data Accumulation; Cycle 9-3

CR 03-03332; Optical Isolator Failures in RRCS (C22); dated May 16, 2003

CR 03-06006; Received RRCS Div 2 Trouble Alarm on 1C22P0002; dated November 2, 2003

CR 03-01687; RRCS Division 1 Fault Received - Reset Unsuccessful; dated April 4, 2003

CR 04-02155; Maintenance Rule Evaluation Required For CR 03-01678; dated April 27, 2004

Control Room Log Entries Associated With C22; January 1, 2003 through December 31, 2003

Control Room Log Entries Associated With M51; January 1, 2003 through December 31, 2003

Control Room Log Entries Associated With M56; January 1, 2003 through December 31, 2003

CR 04-03179; Throttling of 1E12F0024A For SVI-M51T2003A Is Non-Conservative Operation; dated June 16, 2004

Immediate Investigation For CR 04-03179; Rev. 1

CR 03-05699; SVI-M51-T2003A Failed Tech Spec Step; dated October 12, 2003

CR 03-04800; Post LOOP Panel Walkdown Found Valve 1M51F090 Open; dated August 15, 2003

CR 03-02972; As Found Condition of Damaged M56 Cables; dated May 6, 2003

Operations Evolution Order; Flush of E12 to M51A Instrument Line For SVI-M51-T2003A

SVI-M51-T2003-A; Combustible Gas Mixing System A Operability Test; Rev. 3

Drawing D-302-0641-00000; Residual Heat Removal System; Rev. WW

SOI-M51/M56; Combustible Gas Control System and Hydrogen Igniters; Rev. 11

1R01 Adverse Weather Protection

PAP-0911; Control Room Boundary Integrity and Tornado Depressurization Barrier Impairment; Rev. 3

CR 03-00168; Tornado Damper 0M25F0001A Broken Spring; dated January 14, 2003

CR 03-00311; Tornado Damper Strapping Angles Need Redesigned; dated January 22, 2003

CR 03-00621; Collective Significance Condition Report Pertaining to Fire Doors; dated February 7, 2003

CR 03-00819; “Tornado Barrier”, Fire Door DG-113, Unplanned Impairment; dated February 18, 2003

CR 03-01175; Unplanned Impairment For Fire Door/Tornado Barrier DG 112; dated March 11, 2003

CR 03-01424; Unplanned Impairment of Fire/Tornado Door CC-323; dated March 21, 2003

CR 03-01964; Unplanned Fire Impairment for Fire/Tornado Barrier IB-501; dated April 11, 2003

CR 03-02464; Unplanned Impairment For DG-112 Fire Door (Tornado Barrier); dated April 25, 2003

CR 03-02788; Unplanned Fire Impairment For Fire/Tornado Door DG 112; dated May 1, 2003

CR 03-03035; Fire Door/Tornado Barrier CC323 Will Not Latch; dated May 8, 2003

CR 03-03993; Fire Door CC511; dated June 23, 2003

CR 03-04012; Unplanned Fire Impairment to Fire/Tornado Door CC 511; dated June 25, 2003

CR 03-06005; Unplanned Fire Impairment to Fire/Tornado Door SB 015; dated November 2, 2003

CR 03-06454; Fire Door/Tornado Barrier SB-015 Will Not Close Without Assistance; dated December 3, 2003

CR 04-01632; Question on Immediate Investigation For Impaired Tornado Barriers; dated April 1, 2004

CR 02-02237; Seasonal Readiness for Summer 2002; dated July 9, 2002

CR 03-06704; Summer 2003 Seasonal Readiness Critique; dated December 19, 2003

Desk Guide 09; Seasonal Readiness Desk Guide; Rev. 3

CR 03-03852; P46A Chiller; dated June 12, 2003

1R04 Equipment Alignment

VLI-E51; Reactor Core Isolation Cooling System; Rev. 6

SOI-E51; Reactor Core Isolation Cooling System; Rev. 14

DWG 302-0631-00000; Reactor Core Isolation Cooling System; Rev. AA

VLI-R44; Division 1 and 2 Diesel Generator Starting Air System (Unit 1); Rev. 4

VLI-R45; Division 1 and 2 Diesel Generator Fuel Oil System (Unit 1); Rev. 4

VLI-R46; Division 1 and 2 Diesel Generator Jacket Water Systems (Unit 1); Rev. 3

VLI-R47; Division 1 and 2 Diesel Generator Lube Oil; Rev. 5

VLI-R48; Division 1 and 2 Diesel Generator Exhaust, Intake, and Crankcase Systems; Rev. 6

VLI-P47; Control Complex Chilled Water System; Rev. 6

DWG 913-0001-00000; Control Complex Chilled Water; Rev. DD

1R05 Fire Protection

FPI-0CC; Control Complex; Rev. 3

FPI-0IB; Intermediate Building; Rev. 4

1R11 Licensed Operator Requalification

CR 02-04104; Evaluate Enhancements Based Upon NRC Requalification Inspection; dated November 1, 2002

1R13 Maintenance Risk Assessments and Emergent Work Control

PWIS 04-5; Perry Work Implementation Schedule for Week 4, Period 5; dated April 5

PAP-1924; Online Safety Assessment; Rev. 3

PDB-C0011; Plant Data Book; Rev. 2

Probabilistic Safety Assessment; Week 6 Period 5; Rev. 0

Week 9 Period 5 Forecast Risk Profile

PYBP-DES-001; On-Line Risk Assessment Reference Guide; Rev. 2

1R14 Operator Performance During Non-routine Evolutions and Event

PYRM-POS-0001; Perry Operations Section Expectations Handbook; Rev. 4

SOI-B33; Reactor Recirculation System; Rev. 13

CR 04-02471; Electrical Transient Causes Equipment Trips; dated May 14, 2004

CR 04-02492; Post Transient Critique For Electrical Transient; dated May 15, 2004

SOI-P47; Control Complex Chilled Water System; Rev. 10

SOI-P51/P52; Service and Instrument Air System; Rev. 6

ONI-P52; Loss of Service and/or Instrument Air; Rev. 6

ONI-D51; Earthquake; Rev. 6

1R19 Post-Maintenance Testing

WO 200090900; PY-1M15 Annulus Exhaust Gas Treatment System; dated April 7, 2004

CR 04-01843; 1M15C0001B Flow Indication; dated February 17, 2004

FTI-0041; Operation of the Teledyne Quiklock System; Rev. 0

WO 2000001138; Valve GLB MOE 2; Rev. 1

CR 04-01593; Incorrect Hook Up of MOV Test Switch; dated March 30, 2004

CR 04-01599; Potential Valve Overthrust During MOV Testing; dated March 30, 2004

WO 200004558; Replace Isolator Card 261/262 in Bucket; Rev. 01100509

SVI-C51-T0030A; APRM A Channel Calibration for 1C51-K605A, Rev. 6

WO 200087568; Feedwater to Reactor Temp Transmitter; dated May 24, 2004

CR 04-01246; RFA to Support Rework to the 1B21N0602D Instrument Loop; dated May 10, 2004

CR 04-03145; Feedwater Temperature RTD 1B21N0041D; dated June 15, 2004

DWG 208-0010-00001; Nuclear Boiler System Control; Rev. CC

SVI-P45-T2001; ESW Pump A and Valve Operability Test; Rev. 11

1R20 Refueling and Outage Activities

IOI-1; Cold Startup; Rev. 13

IOI-3; Power Changes; Rev. 15

IOI-4; Shutdown; Rev. 9

ONI-E12-2; Loss of Decay Heat Removal; Rev. 8

1R22 Surveillance Testing

GEI-0135; ABB Power Circuit Breakers 5 KV Types 5HK250 and 5HK350; Rev. 6

WO 200035215; 10 Year Overhaul Division 3 Output Breaker; Rev. 1

WO 200059349; Load Center EH13 feed to 1E22C0001; Rev. 1

SVI-C41-T2001-B; Standby Liquid Control B Pump and Valve Operability Test; Rev. 6

SVI-M51-T2003-B; Combustible Gas Mixing System B Operability Test; Rev. 3

SVI-C51-T5351; LPRM Calibration; Rev. 8

SVI-C51-T0024; APRM Gain Channel Calibration; Rev. 4

CR 04-03296; PCR - Deficiency (SVI-P45T2007); dated June 24, 2003

SVI-P45-T2007; ESW Sluice Gate Inflatable Seals Check Valve Operability Test; Rev. 4

SVI-R43-T1318; Diesel Generator Start and Load Division 2; Rev. 9

PTI-R43-P0002; Division 2 Standby Diesel Generator Auxiliary System Monitoring; Rev. 8

2OS1 Access Control to Radiologically Significant Areas

CR 03-05593; No RP Coverage Provided For Entry Into A Locked High Radiation Area; dated October 3, 2003

CR 03-06020; RP Briefing With Incorrect Survey Map; dated November 3, 2003

CR 03-06192; Locked High Rad Door Alarm; dated November 15, 2004

CR 03-06285; Work Added to RWP That Did Not Allow Access to Area; dated November 21, 2004

CR 04-01639; Radiation Work Permit Briefing Requirements; dated April 2, 2004

CR 03-03784; Inadequate Hand Frisker in Heater Bay Building Stairs; dated June 9, 2003

HPI-B0004; HP Instruction, Personnel Radiation Dose Calculation; Revision 8

PYBP-RPS-0004; Radiation Protection Risk Assessment And Management; Revision 1

PYBP-RPS-0005; RPS Response to Positive Whole Body Counts; Revision 0

FENOC; PNPP Removal of Candidate Low Level Radwaste from the Fuel Pool Pool Inventory Log; Printed on April 1, 2004

RWP 040040; Process and Ship RWCU HICs; Revision 0

RWP 040040; ALARA Briefing Checklist; dated March 31, 2004

CR 03-06364; Area In Chemistry Posted Contaminated Has Equipment Cords Running In and Out Of Area; dated November 25, 2003

CR 03-05505; Dose Rate Alarm While Walking Down A Job; dated September 29, 2003

CR 03-05593; No RP Coverage Provided For Entry Into A LHRA; dated October 3, 2003

RWP 040065; Repair Floor Drain Flat Bed Filter; Revision 0

RWP 040002; Medium Risk Activities: Fill And Vent RHR B; Revision 1

RWP 040065; Radiological Survey Reports: 0403187, 0403057, 0403051, 0403046, 0403016, 0403002, 0403001; dated June 17-24, 2004

RWP 040065; Gamma Spectroscopy Analysis: Lapel Air Filter; dated June 18, 2004

PYBP-RPS-0004; Radiation Protection Risk Assessment and Management; Revision 1

HPI-C0005; RWP Preparation And ALARA Review; Revision 14

RWP 040002; Medium Risk Activities; Revision 0

Perry Technical Specifications: Section 5.0 Administrative Controls

CR 04-02487; Individual Entered HRA Without RP Brief; dated May 15, 2004

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

PY-SVI-D17T8034; Unit 1 Plant Vent Effluent System and Sampler Flow Rate Monitor Calibration; dated January 15, 2004

PY-SVI-D17T8040; Unit 2 Plant Vent Effluent System and Sampler Flow Rate Monitor Calibration; dated February 23, 2004

PY-SVI-1D17T8033; Unit 1 Vent Sampler Flow Rate Monitor Calibration; dated May 29, 2002

PY-SVI-D17T8031; Unit 1 Vent Noble Gas Rad Monitor Calibration For 1D17-K786; dated June 27, 2003

PY-SVI-D17T8037; Unit 2 Vent Noble Gas Rad Monitor Calibration For 1D17-K786; dated February 23, 2004

PY-SVI-D17T8002; LRW To ESW Rad Monitor Calibration For D17-K606; dated September 29, 2003

PY-SVI-D17T8052; Off Gas Vent Sampler Flow Rate Monitor Calibration; dated March 17, 2004

PY-SVI-D17T8050; Off Gas Vent Pipe Noble Gas Rad Monitor Calibration For 1D17-K836; dated March 18, 2004

PY-SVI-D17T8043; TB/HB Vent Noble Gas Rad Monitor Calibration For 1D17-K856; dated June 10, 2002

PY-SVI-D17T8047; TB/HB Vent Effluent System and Sampler Flow Rate Monitor Functional/Calibration For 1H51-P757 and 1H51-P756; dated January 20, 2004

PY-SVI-D17T8041; ESW Loop A Rad Monitor Channel Calibration For 1D17-K604; dated August 13, 2002

PY-SVI-D17T8044; ESW Loop B Rad Monitor Channel Calibration for 1D17-K605; dated December 11, 2002

Liquid Scintillation System Calibration (Tritium); dated October 16, 2003

Calibration Status For Detector 1, Selected Geometries; dated June 2003 through February 2004

Calibration Status For Detector 2, Selected Geometries; dated July-September 2003

Calibration Status For Detector 3, Selected Geometries; dated November through December 2003

L70Y050C; Solo Alpha Beta Plateau; dated November 5, 2003

L70Y050D; Solo Alpha Beta Plateau; dated November 1, 2003

LLD Determinations for Detectors 1, 2, 3: Selected Geometries; dated 2003-2004

Interlaboratory Comparisons; dated First and Third Quarters 2002-2003

CR 03-02367; Elevated Iodine On TB/HB Vent; dated April 14, 2003

CR 03-02416; RFA-Effluent Flow From TB/HB When Ventilation Is Secured; dated April 24, 2003

CR 03-02613; Abnormal Effluent Release From Aux Steam Tunnel During N27 Valve Testing; dated April 28, 2003

CR 03-02684; Tritium Activity Detected on a Monthly “ESW A” Composite Sample; dated April 30, 2003

CR 03-03718; Increase In Effluent Release When Off-gas Charcoal Beds Were Bypassed; dated May 31, 2003

CR 03-03785; Missing Tags from Sample Valve and Gaseous Effluent Monitor; dated June 6, 2003

CR 03-03826; Inadequate ODCM Controls in Place for Performance Of SVI-P41-T8009; dated June 11, 2003

CR 03-04761; Missed SVI Reactor Water Iodine Sample Requirement; dated August 14, 2003

CR 03-05826; Tritium Increase In Steam Cycle; dated October 21, 2003

CR 04-00351; Unplanned ODCM Entry Due to Ice Buildup on Service Water Weir Structure; dated January 26, 2004

CR 04-01301; Effluents Lessons Learned During Steam Leak Identification and Repair; dated March 15, 2004

Chemistry Unit Self-Assessment for Plant Effluents and Count Room; dated July 22-25, 2002

PY-C-03-02; Perry Nuclear QA Quarterly Audit Report; dated September 3, 2003

Monthly Liquid Radwaste Releases; dated February 2003-February 2004

Monthly Gaseous Effluent Releases; dated January 2003-February 2004

Compensatory Sampling Data for Gaseous Releases; dated June 2003-January 2004

Compensatory Sampling Data for Liquid ESW Releases; dated April-May 2003

Compensatory Sampling Data for Offgas Vent Releases; dated July 2003-March 2004

Compensatory Sampling Data for TB/HB Vent Releases; dated April 2003-March 2004

CHI-0003; MIDAS Dose Assessment Software Documentation; Revision 1

The PNPP Annual Environmental and Effluent Release Report For 2002

Perry Offsite Dose Calculation Manual; Revision 10

PY-SVI-M15T3015; “A” Annulus Exhaust Gas Treatment Charcoal Adsorber Operability Test and Plenum Inspection; dated August 11, 2003

PY-SVI-M15T3015; “B” Annulus Exhaust Gas Treatment Charcoal Adsorber Operability Test and Plenum Inspection; dated October 16, 2002

PY-SVI-M15T1240A; Annulus Exhaust Gas Treatment System Train A Flow and Filter Operability Test; dated August 5, 2003

PY-SVI-M15T1240B; Annulus Exhaust Gas Treatment System Train B Flow and Filter Operability Test; dated October 2, 2002

2PS2 Radioactive Material Processing and Transportation

Shipment of an RWCU HIC in a 10-120B Cask

CR 04-1005; Dewatered RBST Powdered Resin 573A Shipping Papers; dated March 31, 2004

2PS3 Radiological Environmental Monitoring Program and Radioactive Material Control Programs

Annual Environmental and Effluent Release Report For 2003

Annual Meteorological Report For The PNPP For 2003

PNPP Offsite Dose Calculation Manual ; Revision 10

RPS-04-006; Radiological Engineering Assessment: Source Term Determination Per HPI-F0006; dated May 4, 2004

HPI-H0004; Identification Of Radioactive Materials and Release Of Materials From RRAs; Revision 4

REMP-0013; Sampling Locations; Revision 10

REMP-0009; Surface and Drinking Water Sampling; Revision 7

REMP-0012; Food Product Sampling; Revision 1

REMP-0024; Air Sampler Maintenance and Calibration; Revision 1

REMP-0023; Air Sample Collection; Revision 4

Master List of Sample Locations and Media for the REMP

NUPIC Joint Audit/Survey of Environmental Inc; dated June 3, 2003

PA 01-09; Audit Report: Radiation Monitoring; dated November 20, 2001

449CMIT2002; Self-Assessment: Meteorological Observation and Documentation; dated September 10, 2002

PY-C-03-04; Perry NQA Quarterly Audit Report; dated March 5, 2004

CR 03-06039; Suspect REMP Sample Data Results Found During Monthly Report Review; dated August 12, 2003

CR 03-01819; Environmental TLD Found Missing During Changeout; dated April 5, 2003

CR 03-02680; Excessive Filter Loading At REMP Air Sample Station #4; dated April 30, 2003

CR 04-00084; Annual TLDs Found Missing During Quarterly Changeout; dated January 6, 2004

CR 04-00267; Missing REMP Sample Results Identified During Monthly Review; dated January 19, 2004

CR 03-06421; Meteorological Tower System “A” Temperature; dated November 27, 2003

CR 03-06428; SPDS Computer Point D51BD036 15-Minute Valid Wind Speed; dated December 2, 2003

CR 03-03573; SVI-D51-T306B As Found Data Outside Allowable Value; dated May 28, 2003

CR 03-00641; Met Data Information, Delta Temperature; dated February 9, 2003

Calibration Data for Multichannel Analyzers 1, 2 and 3; dated 2003 - 2004

Quality Assurance Data for Multichannel Analyzers 1, 2 And 3; dated June 2003-June 2004

Interlaboratory Comparisons for the First and Third Quarters of 2002 and 2003

Environmental LLD Determinations for Detector 3; dated 2003 - 2004

PNPP 9883; Air Sampler Maintenance And Calibration: Pumps 5630, 5628, 5635, 5640, 5631, 5636, 5632, 5638, 5641, 5629, 5634, 5633, 5637, 6053, 5639; dated May 5, 2004

PY-SVI-D51T0311A; Met Monitoring System “A” Air Temperature and Delta Air Temperature Calibration for D51-N706 And D51-N708; dated October 31, 2003

PY-SVI-D51T0307A; Met Monitoring System “A” 60 Meter Wind Speed Channel Calibration for D51-N702; dated October 24, 2003

PY-SVI-D51T0308A; Met Monitoring System “A” 60 Meter Wind Direction Channel Calibration for D51-N705; dated October 24, 2003

PY-SVI-D51T0306A; Met Monitoring System “A” 10 Meter Wind Direction Channel Calibration for D51-N703; dated October 24, 2003

PY-SVI-D51T0305A; Met Monitoring System “A” 10 Meter Wind Speed Channel Calibration for D51-N700; dated October 28, 2003

PY-D51; Seismic Monitoring/Meteorological Tower; dated October 28, 2003

4OA1 Performance Indicator Verification

CR 04-03324; Correction to NRC Unplanned Power Reduction Indicator Needed; dated June 25, 2004

Plant Narrative Logs; April 1, 2003 through March 31, 2004

Engineering system unavailability tracking logs; fourth quarter 2003

Engineering system unavailability tracking logs; first quarter 2004

4OA2 Identification and Resolution of Problems

RCIC Outage Critique; Week 6, period 4 cycle 10

CR 04-01824; Division 3 Outage Schedule Improvements; dated April 9, 2004

CR 04-01840; Emergency Service Water Pump Replacement; dated April 9, 2004

CR 04-01855; Inadvertent Air Roll on Div. 3 dated April 10, 2004

CR 04-01857; Testing of Relay 1E22KQ039 Initiated Air Roll of Div. 3 Diesel Generator; dated April 10, 2004

CR 04-01876; 1M43C0003C Failed to Trip on CO_2 Initiation; dated April 12, 2004

CR 04-01853; Valve Found Out of Position; dated April 10, 2004

CR 04-01860; 1E22F591B Found Out of Position; date April 10, 2004

CR 04-01888; Division 3 D/G Lube Oil Sump Level Found Below Lower Limit; dated April 12, 2004

CR 04-01852; E22-SVI-E22-2004 1E22R001 Overranged While Aligned to 1E22R619; dated April 10, 2004

CR 04-01861; Div 3 DG did not Start; dated April 10, 2004

CR 04-01849; Racking Extension not Installed on New EH1301 Breaker; dated April 10, 2004

CR 04-01844; HPCS Unavailability Approaching NRC Green-White Unavailability Threshold; dated April 9, 2004

WO 200067047; Replace Div. 3 DG ‘Overcrank’ Time Delay; dated April 11, 2004

CR 04-01857; Testing of Relay 1E22KQ039 Initiated Air Roll of Diesel Generator; dated April 10, 2004

DWG 302-0358-00000; Div. 3 Starting Air/AIr Dryer Diagram; Rev. E

PWIS 04-05; Perry Work Implementation Schedule; Week 04, Period 05

Perry Nuclear Power Plant Corrective Action Program Site Trend Report; October 1, 2003 Through December 31, 2003; dated February 12, 2004

Perry Maintenance Section Binning Report; January 1, 2004 Through March 31, 2004; dated April 14, 2004

Perry Nuclear Power Plant Health Report; Fourth Quarter 2003

Perry Nuclear Quality Assessment Audit Report PY-C-03-04; dated March 5, 2004

Perry Nuclear Quality Assessment Audit Report PY-C-04-01; dated April 30, 2004

CR 04-01445; Collective Significance: Design Information; Ineffective Corrective Action; dated March 19, 2004

CR 04-01515; Collective Significance: Backlog Reduction/Updating Less Than Effective; dated March 23, 2004

CR 04-01638; Collective Review of Human Performance Errors in the Maintenance Department; dated April 1, 2004

CR 03-01094; Collective Significance of Issues Associated With Pre-Outage Activities; dated March 6, 2003

CR 03-00621; Collective Significance Condition Report Pertaining to Fire Doors; dated February 7, 2003

4OA5 Other Activities

CR 03-06341; Documentation of Evaluation of LOOP Outage and Recovery; dated August 14, 2003

CR 03-05912; Collective Significance Review of 8/14/03 Loop; dated October 27, 2003

CR 03-04772; Loss of Off-site Power and Generator Trip Due to an Underfrequency Condition; dated August 14, 2003

CR 03-04765; Unplanned Reactor Scram; dated August 14, 2003

SVI-R10-T5227; Off-site Power Availability Verification; Rev. 0.3

SVI-R10-T5228; On-site Power Distribution System Verification; rev. 1

ONI-S11; Unstable Grid; Rev. 1

PAP-0102; Interface with the Transmission System Operator; Rev. 2

PAP-1124; On-Line Safety Assessment; Rev. 3

Calc DB-005; Loss of Offsite Power and Power Recovery; Rev. 2

Memo J. Zarea to J. Stephens; Request for Summer 2003 Perry Off-site Power Voltage Assessment; dated April 2, 2003

Generator Interconnection and Operating Agreement, attachment Q; Second revised vol. 1

Transmission Operations, Operating Procedure, Perry #1 EMS Display Information Tag

LIST OF ACRONYMS USED

ALARA	As Low As Is Reasonably Achievable
CFR	*Code of Federal Regulations*
CR	condition report
EDG	emergency diesel generator
ESW	emergency service water
FENOC	FirstEnergy Nuclear Operating Company
FWLCS	Feedwater Leakage Control System
HPCS	high pressure core spray
HRA	high radiation area
IMC	Inspection Manual Chapter
LCO	limiting condition for operation
LER	Licensee Event Report
LOOP	loss of offsite power
LPCS	low pressure core spray
NCV	non-cited violation
NLO	Non-Licensed Operator
NOED	Notice of Enforcement Discretion
NRC	Nuclear Regulatory Commission
OE	Operability Evaluation
ONI	Off-Normal Instruction
OSP	offsite power
PAP	Perry Administrative Procedure
PI	performance indicator
PMT	post-maintenance testing
RCIC	reactor core isolation cooling
REMP	Radiological Environmental Monitoring Program
RETS/ODCM	Radiological Environmental Technical Specifications/Offsite Dose Calculation Manual
RP	radiation protection
RPT	Radiation Protection Technician
RRA	Radiologically Restricted Area
RWP	Radiation Work Permit
SDP	significance determination process
SVI	surveillance instruction
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
USAR	Updated Safety Analysis Report
VHRA	very high radiation area
VLI	valve lineup instruction