UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

February 1, 2011

Mr. Mark Bezilla
Site Vice President
FirstEnergy Nuclear Operating Company
Perry Nuclear Power Plant
P. O. Box 97, 10 Center Road, A-PY-A290
Perry, OH 44081-0097

SUBJECT: PERRY NUCLEAR POWER PLANT NRC INTEGRATED INSPECTION REPORT 05000440/2010005

Dear Mr. Bezilla:

On December 31, 2010, 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 January 20, 2011, with Mr. K. Krueger and 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, three NRC-identified findings and one self-revealed finding of very low safety significance (Green) were identified. All of the findings were determined to involve violations of NRC requirements. Additionally, a licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. Because the findings were of very low safety significance and because the issues were entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of these NCVs, 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 addition, if you disagree with the cross-cutting aspects assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector 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), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000440/2010005
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-440
License No:	NPF-58
Report No:	050000440/2010005
Licensee:	FirstEnergy Nuclear Operating Company (FENOC)
Facility:	Perry Nuclear Power Plant, Unit 1
Location:	Perry, Ohio
Dates:	October 1, 2010, through December 31, 2010
Inspectors:	M. Marshfield, Senior Resident Inspector T. Hartman, Resident Inspector B. Palagi, Senior Operations Engineer M. Phalen, Senior Health Physicist D. Reeser, Operations Engineer C. Scott, Reactor Engineer P. Smagacz, Reactor Engineer P. Voss, Reactor Engineer
Approved by:	Jamnes L. Cameron, Chief Branch 6 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000440/2010005; 10/01/2010 – 12/31/2010; Maintenance Effectiveness; Maintenance Risk Assessments and Emergent Work Control; Surveillance Testing; and Problem Identification and Resolution.

The inspection was conducted by resident and regional inspectors. The inspection report (IR) covers a 3-month period of resident inspection. Four green findings, all of which were non-cited violations (NCVs) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 0609 “Significance Determination Process” (SDP). Cross-cutting aspects were determined using IMC 0310, "Components Within The Cross-Cutting Areas." 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 4, dated December 2006.

A. Inspector-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

Green. A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed for a failure to follow plant procedures. Specifically, the licensee failed to perform a “burn-in” on a voltage regulator card, as required by Nuclear Operating Business Practice (NOBP)-ER-3399, Fleet Circuit Card and Power Supply Burn-in Guide, which failed prematurely and resulted in an unexpected half scram. The licensee entered the issue into their corrective action program.

The performance deficiency was determined to be more than minor because the finding impacts the Equipment Performance attribute of the Initiating Events Cornerstone and adversely affects the cornerstone objective to limit the likelihood of those events that could upset plant stability and challenge critical safety functions during power operations. The finding was of very low safety significance because the Phase 3 analysis resulted in a minimal change in core damage frequency. This finding was associated with a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area because the licensee did not use up-to-date work packages to assure nuclear safety. Specifically, the licensee did not update the voltage regulator card replacement work plan to include the new circuit card burn-in procedure requirement. (H.2(c)) (Section 1R12)

Cornerstone: Mitigating Systems

Green. The inspectors identified a finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, Test Control, for unacceptable preconditioning of the high-pressure core spray (HPCS) suction valves and the HPCS pump minimum flow valve prior to quarterly inservice testing (IST) of the same valves. The inspectors determined that a maintenance delay, which caused a shift in the scheduled performance of the quarterly pump and valve testing of the HPCS system, produced a schedule conflict that resulted in cycling of the HPCS pump suction valves less than 9 hours prior to scheduled quarterly IST of the same valves. The schedule change also caused the HPCS pump minimum flow valve to be cycled less

than 26 hours prior to the eventual IST of that valve. The licensee entered the issue into their corrective action program.

The performance deficiency was determined to be more than minor because, if left uncorrected, it could lead to a more significant safety concern. The finding was of very low safety significance because it was not a design/qualification deficiency, did not represent a loss of system safety function, did not result in a loss of function of a single train for greater than its Technical Specification-allowable outage time, did not result in a loss of function of non safety-related risk-significant equipment, and was not risk-significant due to external events. This finding was associated with a cross-cutting aspect in the Work Control component of the Human Performance cross-cutting area because the licensee did not properly evaluate work week schedule changes with regard to the impact on other scheduled work. Specifically, the licensee did not reschedule work in a manner which prevented preconditioning of the HPCS suction and pump minimum flow valves. (H.3(b)) (Section 1R13)

Green. The inspectors identified a finding of very low safety significance and associated non-cited violation of Technical Specification 5.4.1.a, for failure to establish an adequate procedure to test the high-pressure core spray (HPCS) test return valve to the suppression pool. The inspectors determined that the licensee performed a surveillance that cycled the valve prior to performing stroke time testing, which constituted unacceptable preconditioning. The licensee entered the issue into their corrective action program.

The performance deficiency was determined to be more than minor because, if left uncorrected, it could lead to a more significant safety concern. The finding was of very low safety significance because it was not a design/qualification deficiency, did not represent a loss of system safety function, did not result in a loss of function of a single train for greater than its Technical Specification-allowable outage time, did not result in a loss of function of non safety-related risk-significant equipment and was not risk-significant due to external events. This finding was associated with a cross-cutting aspect in the Operating Experience component of the Problem Identification and Resolution cross-cutting area because the licensee did not implement industry operating experience into station processes and procedures. Specifically, the licensee did not update or revise the surveillance test to prevent unacceptable preconditioning of the valve. (P.2(b)) (Section 1R22)

Green. The inspectors identified a finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure to evaluate and maintain functionality assessments for the main control room emergency breathing air system, which is described in the Updated Safety Analysis Report (USAR). The inspectors determined that the leakage rate that existed on the control room breathing air system exceeded the allowed leakage rate for the system to maintain functionality from July through September 2010, as evaluated by a licensee engineering evaluation completed on December 16, 2010. The licensee entered the issue into their corrective action program.

The performance deficiency was determined to be more than minor because it is similar to example 4.d of IMC 0612, Appendix E, Examples of Minor Issues, and would significantly impact the operators’ ability to shutdown the reactor from the main control room using the breathing air system. In addition, the performance deficiency impacts

the Equipment Performance attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because it was not a design/qualification deficiency, did not represent a loss of system safety function, did not result in a loss of function of a single train for greater than its Technical Specification-allowable outage time, did not result in a loss of function of non safety-related risk-significant equipment and was not risk-significant due to external events. This finding was associated with a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area because the licensee did not maintain a system described in the USAR in a condition that would allow it to meet its described function. Specifically, operators would not be able to remain in the main control room using breathing air for the required time prescribed by the system description in the USAR due to excessive leakage from a system relief valve. (H.2(d)) (Section 4OA2.3)

B. Licensee-Identified Violations

One violation of very low safety significance identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation and corrective action tracking number is listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

The plant began the inspection period at 100 percent power. With the exception of minor reductions in power to support routine surveillances and rod pattern adjustments, the plant remained at full power for the entire period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

.1 Winter Seasonal Readiness Preparation

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Safety Analysis Report (USAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- auxiliary boiler systems, and
- building heating systems.

This inspection constituted one sample for winter seasonal readiness preparations as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Condition – High Wind Conditions

a. Inspection Scope

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for October 26, 2010, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On October 26, 2010, the inspectors walked down the normal and alternate in-coming alternating current (AC) power systems, in addition to the licensee's emergency AC power systems, because their safety-related functions could be affected or required as a result of high winds or tornado-generated missiles, or the loss of offsite power. The inspectors evaluated the licensee staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the USAR and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. The inspectors also reviewed a sample of CAP items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment.

This inspection constituted one sample for readiness for impending adverse weather conditions as defined in IP 71111.01-05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04Q)

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- emergency service water (ESW) system train 'B' during the restoration of ESW train 'A' from Division 1 outage on October 7, 2010;
- reactor core isolation cooling (RCIC) following a maintenance outage on October 22, 2010; and
- Division 1 emergency diesel generator (EDG) while repairing a leak on the Division 2 EDG jacket water system on November 19, 2010.

The inspectors selected these systems based on their risk-significance relative to the Reactor Safety Cornerstone at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the systems, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, USAR, Technical Specification (TS) requirements,

outstanding work orders (WOs), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

These inspections constituted three partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Fire Zone 0EW-1a & 1b; ESW Pumphouse;
- Fire Zone 0FH-1 & 2a; Fuel Handling Building Elevation 574'10" & 599' North;
- Fire Zone SB-604' & SB-620'; Service Building;
- Fire Zones 1CC-6 & 2CC-6; Control Complex Building Elevation 679' 6"; and
- Fire Zone DG-1D; Diesel Generator (DG) Building Hallway.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and implemented adequate compensatory measures for out-of-service, degraded, or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted five quarterly samples for fire protection as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the USAR, engineering calculations, and Off-Normal Instructions (ONIs) to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions.

The inspectors performed a walkdown of the ESW pumphouse to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments.

This inspection constituted one sample for internal flooding as defined in IP 71111.06-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On November 15, 2010, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;

- control board manipulations;
- oversight and direction from supervisors; and
- the ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly sample for the licensed operator requalification program as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Facility Operating History (71111.11B)

Completion of Sections .2 through .10 constituted one biennial licensed operator requalification inspection sample as defined in IP 71111.11B.

a. Inspection Scope

The inspectors reviewed the plant's operating history from January 2009 through October 2010 to identify operating experience that was expected to be addressed by the Licensed Operator Requalification Training (LORT) program. The inspector verified that the identified operating experience had been addressed by the facility licensee in accordance with the station's approved Systems Approach to Training (SAT) program to satisfy the requirements of 10 CFR 55.59(c). The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

.3 Licensee Requalification Examinations

a. Inspection Scope

The inspectors performed an inspection of the licensee's LORT test/examination program for compliance with the station's SAT program which would satisfy the requirements of 10 CFR 55.59(c)(4). The reviewed operating examination material consisted of two operating tests, each containing three dynamic simulator scenarios and six Job Performance Measures (JPMs). The written examinations reviewed consisted of two written reactor operator and two written senior reactor operator examinations. The station does not use static simulator examinations. Each written examination contained 35 open reference questions. The inspectors reviewed the annual requalification operating test and biennial written examination material to evaluate general quality, construction, and difficulty level. The inspectors assessed the level of examination material duplication from week-to-week during the current year operating test. The examiners assessed the amount of written examination material duplication from

week-to-week for the current written examinations administered in 2010. The inspectors reviewed the methodology for developing the examinations, including the LORT program 2-year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

.4 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed the administration of a requalification operating test to assess the licensee's effectiveness in conducting the test to ensure compliance with 10 CFR 55.59(c)(4). The inspectors evaluated the performance of one shift crew in parallel with the facility evaluators during three dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility evaluators during the administration of several JPMs. The inspectors assessed the facility evaluators' ability to determine adequate crew and individual performance using objective, measurable standards. The inspectors observed the training staff personnel administer the operating test, including conducting pre-examination briefings, evaluations of operator performance, and individual and crew evaluations upon completion of the operating test. The inspectors evaluated the ability of the simulator to support the examinations. A specific evaluation of simulator performance was conducted and documented in the section below titled, "Conformance with Simulator Requirements Specified in 10 CFR 55.46." The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

.5 Examination Security

a. Inspection Scope

The inspectors observed and reviewed the licensee's overall licensed operator requalification examination security program related to examination physical security (e.g., access restrictions and simulator considerations) and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of Examinations and Tests." The inspectors also reviewed the facility licensee's examination security procedure, any corrective actions related to past or present examination security problems at the facility, and the implementation of security and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the examination process. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

.6 Licensee Training Feedback System

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee's processes for revising and maintaining its LORT program up to date, including the use of feedback from plant events and industry experience information. The inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions. This evaluation was performed to verify compliance with 10 CFR 55.59(c) and the licensee's SAT program. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

.7 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous biennial requalification examinations and the training from the current examination cycle to ensure that they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans. This evaluation was performed in accordance with 10 CFR 55.59(c) and with respect to the licensee's SAT program. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

.8 Conformance with Operator License Conditions

a. Inspection Scope

The inspectors reviewed the facility and individual operator licensees' conformance with the requirements of 10 CFR Part 55. The inspectors reviewed the facility licensee's program for maintaining active operator licenses and to assess compliance with 10 CFR 55.53(e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators and which control room positions were granted watch-standing credit for maintaining active operator licenses. The inspectors reviewed the facility licensee's LORT program to assess compliance with the requalification program requirements as described by 10 CFR 55.59(c). Additionally, medical records for six licensed operators were reviewed for compliance with 10 CFR 55.53(l). The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

.9 Conformance with Simulator Requirements Specified in 10 CFR 55.46

a. Inspection Scope

The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements as prescribed in 10 CFR 55.46, "Simulation Facilities." The inspectors also reviewed a sample of simulator performance test records (i.e., transient tests, malfunction tests, steady state tests, and core performance tests), simulator discrepancies, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy process to ensure that simulator fidelity was maintained. Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions as well as on nuclear and thermal hydraulic operating characteristics. The inspectors conducted interviews with members of the licensee's simulator staff about the configuration control process and completed the IP 71111.11, Appendix C, checklist to evaluate whether or not the licensee's plant-referenced simulator was operating adequately as required by 10 CFR 55.46(c) and (d). The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

.10 Annual Operating Test Results (71111.11B)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the biennial written examination, the individual JPM operating tests, and the simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee in 2010 as part of the licensee's operator licensing requalification cycle. These results were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," and IP 71111.11, "Licensed Operator Requalification Program." The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant systems:

- Division 2 EDG; and
- average power range monitor (APRM) 'G'.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two samples for quarterly maintenance effectiveness as defined in IP 71111.12-05.

b. Findings

Introduction: A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the licensee's failure to follow plant procedures. Specifically, the licensee failed to perform a "burn-in" on a voltage regulator card, as required by NOBP-ER-3399, Fleet Circuit Card and Power Supply Burn-in Guide, which failed prematurely and resulted in an unexpected half scram.

Description: On November 24, 2010, the licensee performed surveillance testing and replacement of three 15-volt regulator cards (Z408, Z425, and Z427) associated with average power range monitor (APRM) 'G'. During the restoration of the APRM, power supply PS23 tripped/down-powered and an unexpected reactor half scram was received. The licensee implemented a troubleshooting plan to replace the three newly installed cards, one at a time, with the original cards, in an attempt to reset power supply PS23. After all three cards were replaced with the original cards the power supply was able to

be reset. The 'G' APRM was successfully retested, restored to operable status, and the half scram was reset.

The licensee determined the cause of the event was due to the premature failure of one of the voltage regulator cards (Z427). The licensee sent the failed regulator card to a lab for testing. The results showed the output of the 15-volt card was approximately 52 millivolts. The failed card was then returned to the vendor for failure analysis. Because the card failed so soon, approximately 1 hour after being installed in the system, the licensee questioned the burn-in on the card. Burn-in is the process of placing a circuit card under a test load for a specified period of time prior to installation to verify the card is acceptable for use. This also helps determine if there are any manufacturing defects present in the card. The investigation determined the failed voltage regulator card had not received any burn-in on site prior to installation. It also determined the card did not receive any burn-in from the vendor prior to being procured by the plant. A review of the work plan did not include any steps to perform a burn-in on the circuit cards.

Procedure NOBP-ER-3399, Fleet Circuit Card and Power Supply Burn-in Guide was issued for use on November 3, 2010. This procedure requires personnel to perform testing and verification of equipment that directly impacts and affects quality and is identified as mandatory adherence. The procedure states, in part, that all critical circuit cards require a burn-in of 100 hours performed by the vendor, as well as, an additional 100 hour burn-in performed by the site. During the investigation, the licensee identified that the work group responsible for implementing the procedure was unaware of the new procedure and its requirements. Corrective actions planned include a review of all circuit card and power supply stock codes and the addition of notes to these stock codes within the work management program (SAP) to ensure the required burn-in is accomplished.

Analysis: The inspectors determined that the failure to follow plant procedures was a performance deficiency. Specifically, the licensee failed to “burn-in” the replacement voltage regulator cards prior to installation as required by NOBP-ER-3399. The inspectors evaluated the performance deficiency in accordance with IMC 0612, Appendix B, “Issue Screening.” This performance deficiency was compared to the examples in IMC 0612, Appendix E, “Examples of Minor Issues”, but review of the examples could not resolve whether the performance deficiency was minor or more-than-minor. The performance deficiency was then screened against the minor screening questions and was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of Equipment Performance and affected the cornerstone objective of limiting the likelihood of those events that could upset plant stability and challenge critical safety functions during power operations.

The inspectors evaluated the finding in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Phase 1 - Initial Screening and Characterization of Findings,” Table 4a for the Initiating Events Cornerstone. The inspectors answered “Yes” to the screening question “Does the finding contribute to both the likelihood of a reactor trip AND the likelihood that mitigation equipment or functions will not be available?” since the card failure initiated a reactor half scram and prevented the APRM from performing it design function. Therefore, a Phase 2 SDP evaluation was performed using IMC 0609, Appendix A, “Determining the Significance of Reactor Inspection Findings for At-Power Situations.”

Using IMC 0609, Appendix A, and the Phase 2 notebook, the performance deficiency was evaluated to conservatively increase the initiating event frequency (IEF) for the "TRANSIENTS" initiator by one order of magnitude. Using the SDP Worksheet for Table 3.1, Transients (Reactor Trip), resulted in three nine-"9" sequences or one eight-"8" sequence using the counting rule (for an exposure time of greater than 30 days). To better characterize the risk significance, a Phase 3 SDP evaluation was performed.

The Senior Reactor Analysts (SRAs) evaluated the finding using the Perry Standardized Plant Analysis Risk (SPAR) model (Change 8.15). It was conservatively assumed that the performance deficiency would result in one additional reactor trip in a given year. Using the SPAR model, the result was a total estimated change in core damage frequency of 7.3E-08/yr. The two dominant core damage sequences involved (1) loss of the main condenser, failure of suppression pool (SP) cooling, failure of containment spray, failure of the power conversion system, failure of containment venting, and failure of late injection, and (2) failure of the reactor protection system to shutdown the reactor with failure of the recirculation pumps to trip. Based on the Phase 3 analysis, the inspectors determined that the finding was of very low safety-significance (Green).

This finding was associated with a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area because the licensee did not use up-to-date work packages to assure nuclear safety. Specifically, the licensee did not update the voltage regulator card replacement work plan to include the new circuit card burn-in procedure requirement. (H.2(c))

Enforcement: Criterion V, "Instructions, Procedures, and Drawings," of 10 CFR Part 50, Appendix B, requires, in part, that activities affecting quality be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, on November 24, 2010, the licensee failed to follow plant procedures affecting quality. Specifically, the licensee failed to perform a "burn-in" on a voltage regulator card as required by NOBP-ER-3399, Fleet Circuit Card and Power Supply Burn-in Guide. The failure to follow the procedure allowed the circuit card to be placed in service on a critical component and it failed prematurely, resulting in an unexpected half scram. Because this violation was of very low safety significance and it was entered into the licensee's CAP as CR 10-86289, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy.
(NCV 05000440/2011002-01, Failure to Follow Procedures Results in Unplanned Half Scram)

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- risk assessments and risk management during the October 5-7, 2010, Division 1 safety systems planned outage;

- HPCS surveillance schedule delay and suction piping pressurization on October 20-22, 2010;
- LH-1-A outage during conservative grid operations on October 23, 2010; and
- EH1114 breaker challenges with RCIC unavailable on November 2, 2010.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed, as required by 10 CFR 50.65(a)(4), and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These maintenance risk assessments and emergent work control activities constituted four samples as defined in IP 71111.13-05.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion XI, Test Control, for scheduling surveillances in an order that caused unacceptable preconditioning of the HPCS suction valves and HPCS pump minimum flow valve prior to scheduled quarterly IST. Specifically, a surveillance conducted the night before the IST was scheduled stroked the HPCS suction valves open and closed 9 hours prior to scheduled stroke time testing, and a separate surveillance scheduled 26 hours prior to the IST cycled the HPCS pump minimum flow valve. These tests constituted unacceptable preconditioning of the valves.

Description: On October 23, 2010, the inspectors observed the performance of Surveillance Instruction (SVI)-E22-T2001, HPCS Pump and Valve Operability Test. Included in this test are quarterly inservice timed valve strokes of 1E22-F001, HPCS condensate storage tank (CST) suction valve, 1E22-F015, HPCS SP suction valve, and 1E22-F012, HPCS pump minimum flow valve, as required by the IST program. A review of shift narrative logs identified that SVI-1E22-T2004, HPCS Pump Suction Check Valves Operability Test, was performed around 1:00 a.m. on October 23, 2010. The T2004 surveillance re-aligns the HPCS suction path to verify that both the CST and SP suction check valves close when required. The surveillance cycles each valve in both directions in order to complete the test of the suction check valves.

The logs also identified the conduct of procedure SVI-1E22-T1200, HPCS Pump Discharge Pressure – High (Bypass) Channel Functional Test, which cycled the HPCS pump minimum flow valve on October 22, 2010. The inspectors pointed out to the licensee on the morning of October 22, 2010, that the cycling of the minimum flow valve was unacceptable preconditioning. The licensee responded by drafting a white paper to document that, in the licensee's opinion, this was not unacceptable preconditioning. The NRC Technical Guidance, Part 9900, Maintenance – Preconditioning of Structures, Systems and Components Before Determining Operability, states that acceptable "preconditioning should have been evaluated and

documented in advance of the surveillance." The inspectors determined that the licensee's white paper was not valid for the purpose of justifying the preconditioning of the HPCS pump minimum flow valve because it was not completed prior to the preconditioning of the valve.

Inspection Manual Technical Guidance 9900 defines unacceptable preconditioning, in part, as:

> "The alteration, variation, manipulation, or adjustment of the physical condition of a structure, system, and component (SSC) before or during TS surveillance or ASME Code testing that will alter one or more of an SSC's operational parameters, which results in acceptable test results. Such changes could mask the actual as-found condition of the SSC and possibly result in an inability to verify the operability of the SSC. In addition, unacceptable preconditioning could make it difficult to determine whether the SSC would perform its intended function during an event in which the SSC might be needed."

Additionally, since the licensee did not perform an evaluation to justify that preconditioning of the valves was acceptable prior to conducting the required testing, the licensee's surveillance testing sequence that cycled the valves prior to obtaining stroke time data constituted unacceptable preconditioning of the valves.

Analysis: The inspectors determined that stroking of the HPCS suction valves and the HPCS pump minimum flow valve prior to as-found stroke timing constituted unacceptable preconditioning of three HPCS system valves and is a performance deficiency. Specifically, the IST surveillance may not adequately indicate the potential valve degradation when the valves have been preconditioned. The inspectors determined that the performance deficiency affected the Mitigating Systems Cornerstone, because it could mask the true as-found condition of a component designed to mitigate accidents. The inspectors evaluated the performance deficiency in accordance with IMC 0612, Appendix B, "Issue Screening." This performance deficiency was compared to, and was not similar to, any of the examples in IMC 0612, Appendix E, "Examples of Minor Issues," but was characterized as more than minor because, if left uncorrected, it could lead to a more significant safety concern.

The inspectors determined the finding could be evaluated in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 3b for the Mitigating Systems Cornerstone. The inspectors determined the finding was of very low risk significance because it was not a design/qualification deficiency, did not represent a loss of system safety function, did not result in a loss of function of a single train for greater than its TS-allowable outage time, did not result in a loss of function of non safety-related risk-significant equipment, and was not risk significant due to external events.

This finding was associated with a cross-cutting aspect in the work control component of the Human Performance cross-cutting area because the licensee did not properly evaluate work week schedule changes with regard to the impact on other scheduled work. Specifically, the licensee did not schedule work in a manner which prevented preconditioning of the HPCS suction valves and HPCS pump minimum flow valve. (H.3(b))

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion XI, Test Control, states, in part, that "A test program shall be established to assure that all testing required to demonstrate that SSCs will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents." Contrary to this requirement, on October 23, 2010, the licensee failed to establish procedures that assured the timed closed stroke testing of the HPCS test return valve and HPCS pump minimum flow valve was performed under suitable environmental conditions, in that the credited valve stroke times were taken after the valve had been pre-conditioned. Because this finding is of very low safety significance and because it was entered into the licensee's CAP as CR 10-85341, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 05000440/2010005-02; Unacceptable Preconditioning of HPCS Suction and Pump Minimum Flow Valves Prior to ASME Inservice Testing.)

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- HPCS suction piping overpressure condition;
- non safety-qualified lube oil determined to be in the sump for the RCIC turbine;
- modification to existing guidance to operators for coping with electrical bus F1C08 failure;
- Division 2 EDG jacket water heat exchanger leak; and
- motor control center, switchgear and battery room heating, ventilation, and air conditioning system functionality with loss of instrument air.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and USAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted five samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R18 Temporary Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following temporary modifications:

- Engineering Change Package (ECP) 09-0793; Temporary Thermocouple Cable to Condensate Storage Tank Piping; and
- ECP 08-0183; Temporary Skid and Temporary Cross-Tie Piping for Injection of Noble Chemicals into Perry's Feedwater System.

The inspectors compared the temporary configuration changes and associated 10 CFR 50.59 screening and evaluation information against the design basis, the USAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected systems. The inspectors also compared the licensee's information to operating experience information to ensure that lessons learned from other utilities had been incorporated into the licensee's decision to implement the temporary modification. The inspectors, as applicable, performed field verifications to ensure that the modifications were installed as directed; the modifications operated as expected; modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. Lastly, the inspectors discussed the temporary modifications with operations, engineering, and training personnel to ensure that the individuals were aware of how extended operation with the temporary modifications in place could impact overall plant performance. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two temporary modification samples as defined in IP 71111.18-05.

b. Findings

No findings were identified.

.2 Permanent Plant Modifications

a. Inspection Scope

The engineering design package for ECP 09-0730-001; ECP to Resolve the Fault on the ESW 'B' Motor Cable, was reviewed and selected aspects were discussed with engineering personnel. This document and related documentation were reviewed for adequacy of the associated 10 CFR 50.59 safety evaluation screening, consideration of design parameters, implementation of the modification, post-modification testing, and relevant procedures, design, and licensing documents were properly updated. The inspectors observed ongoing and completed work activities to verify that installation was consistent with the design control documents. The modification utilized an installed cable for the unfinished Unit 2 ESW system to replace the faulted cable for the 'B' ESW pump identified in October of 2009. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

This inspection constituted one permanent plant modification sample as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following post-maintenance (PM) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Division 1 emergency closed cooling temperature controller replacement during the October 5-7, 2010, Division 1 safety systems outage;
- Division 1 EDG output breaker, EH1102, following repairs during the week of October 12, 2010;
- Breaker EH 1114 PM retest during the week of November 1, 2010;
- RCIC remote shutdown test after maintenance during the week of November 4, 2010;
- Breaker EH 1303 PM retest during the week of November 15, 2010; and
- 'B' annulus exhaust gas treatment system filter bypass testing after filter maintenance on December 22, 2010.

These activities were selected based upon the SSCs' ability to impact risk. The inspectors evaluated these activities for 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 in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TS, the USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with PM tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted six PM testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Quarterly Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- HPCS DG start and load testing during the week of October 19, 2010 (routine);
- HPCS pump and valve testing during the week of October 23, 2010 (IST);
- PRI-TSR reactor coolant system leakage determination during the week of October 25, 2010 (RCS Leakage);
- standby liquid control 'B' pump and valve operability test conducted on November 6 and 7, 2010 (routine);
- drywell floor drain sump flow monitoring functional testing during the week of November 8, 2010 (routine); and
- reactor protection system manual scram channel functional testing conducted on December 26, 2010 (routine).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrate operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges, and the calibration frequency were in accordance with TS, the USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy;
- applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability;
- tests were performed in accordance with the test procedures and other applicable procedures;
- jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for IST activities, testing was performed in accordance with the applicable version of Section XI, ASME Code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;

- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted four samples for routine surveillance testing; one sample for IST; and one sample for RCS leak detection as defined in IP 71111.22, Sections -02 and -05.

b. Findings

.1 Unacceptable Preconditioning of HPCS Valve Prior to ASME Inservice Testing

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated NCV of TS 5.4.1.a for failure to establish an adequate procedure to test the HPCS test return valve to the SP. Specifically, written test control procedures did not prevent and, therefore, resulted in unacceptable preconditioning of the valve prior to their required inservice stroke time testing.

Description: On October 23, 2010, the inspectors observed the performance of surveillance test SVI-E22-T2001, HPCS Pump and Valve Operability Test. Included in this test is the quarterly timed valve stroke of valve 1E22-F023, HPCS test valve to suppression pool, as required by the IST program. During review of the procedure it was identified that the alignment of the system to meet test conditions operates the valve immediately prior to stroke time testing. The procedure requires the following sequence of steps to be performed in order:

- open the valve and verify open exercise requirements;
- throttle the valve partially closed to establish a flow rate to support testing of the system;
- return the valve to full open; and
- stroke time the valve in the closed direction.

Stroking the valve in the closed direction is the safety direction to allow HPCS to provide flow to the reactor on a required start.

Inspection Manual Technical Guidance Part 9900 defines unacceptable preconditioning, in part, as

> "The alteration, variation, manipulation, or adjustment of the physical condition of an SSC before or during TS surveillance or ASME Code testing that will alter one or more of an SSC's operational parameters, which results in acceptable test results. Such changes could mask the actual as-found condition of the SSC and possibly result in an inability to verify the operability of the SSC. In addition, unacceptable preconditioning could make it difficult to determine whether the

SSC would perform its intended function during an event in which the SSC might be needed."

Technical Guidance Part 9900 further describes that some types of preconditioning may be considered acceptable, but that "this preconditioning should have been evaluated and documented in advance of the surveillance." Since the licensee had not performed an evaluation to justify that preconditioning of the valve was acceptable prior to completing the testing, the licensee's surveillance testing sequence that cycled the valve prior to obtaining stroke time data constituted unacceptable preconditioning of the valve.

Additionally, the unacceptable preconditioning of the HPCS valve was not in accordance with the licensee's IST procedural guidance. Nuclear Operating Procedure (NOP)-ER-3204, Inservice Testing Program, states, in part, "Components are tested in accordance with applicable codes, standards, and commitments."

Analysis: The inspectors determined that the failure to establish adequate surveillance test procedures for the HPCS test return to SP valve is a performance deficiency. Specifically, the procedure did not prevent preconditioning of the valve prior to IST. The inspectors determined that the performance deficiency affected the Mitigating Systems Cornerstone, because it could mask the true as-found condition of a component designed to mitigate accidents. The inspectors evaluated the performance deficiency in accordance with IMC 0612, Appendix B, "Issue Screening." This performance deficiency was compared to, and was not similar to, any of the examples in IMC 0612, Appendix E, "Examples of Minor Issues," but was characterized as more than minor because, if left uncorrected, it could lead to a more significant safety concern.

The inspectors determined the finding could be evaluated in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," Table 3b for the Mitigating Systems Cornerstone. The inspectors determined the finding was of very low risk significance because it was not a design/qualification deficiency, did not represent a loss of system safety function, did not result in a loss of function of a single train for greater than its TS-allowable outage time, did not result in a loss of function of non safety-related risk-significant equipment, and was not risk significant due to external events.

This finding was associated with a cross-cutting aspect in the operating experience component of the Problem Identification and Resolution cross-cutting area because the licensee did not implement industry operating experience into station processes and procedures. Specifically, the licensee did not update/revise the surveillance test to prevent unacceptable preconditioning of the valve. (P.2(b))

Enforcement: Technical Specification 5.4.1.a requires that written procedures be established, implemented, and maintained covering activities described in Regulatory Guide 1.33, Revision 2, Appendix A, 1978, which includes surveillance procedures (Section 8b). Title 10 CFR Part 50, Appendix B, Criterion XI, Test Control, states, in part, that "A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents."

Contrary to this requirement, on October 23, 2010, the licensee failed to establish procedures that assured the timed closed stroke testing of the HPCS test return valve was performed under suitable environmental conditions, in that the credited valve stroke times were taken after the valve had been pre-conditioned. Because this finding is of very low safety significance and because it was entered into the licensee's CAP as CR 10-85341, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 05000440/2010005-03; Unacceptable Preconditioning of HPCS Valve Prior to ASME Inservice Testing.)

.2 Seismic Stability of Standby Liquid Control System Test Tank

Introduction: The inspectors identified an unresolved item (URI) concerning the seismic stability and potential consequences from a seismic failure of the standby liquid control (SLC) test tank. This tank in containment is normally maintained with enough water in the tank to support quarterly system testing, usually greater than 75 percent full.

Description: On November 8, 2010, the inspectors conducted a review of the quarterly pump and valve test for the standby liquid control system. Information from operating experience concerning seismic stability of similar SLC systems at other sites was incorporated in the review. The SLC system at other sites was determined to be not seismically stable with water in the tank, and the system operation at the other sites had been modified to involve only filling the test tank with water to support the actual conduct of a test.

Perry subsequently directed draining of the test tank while an evaluation was conducted. The licensee conducted a detailed couple analysis of the tank, including the attached piping, to determine tank stability at both a 75 percent and 100 percent filled with water condition. The report, completed on December 8, 2010, determined that the tank would withstand a design basis faulted event. Regional specialist inspectors reviewed the evaluation and generated questions that have been asked of the licensee concerning the analysis.

At the conclusion of the inspection period the inspectors and the licensee were continuing discussions regarding the seismic stability of the SLC test tank. Pending the results of additional discussions and additional information, this will remain open as an unresolved item (URI). (URI 05000440/2010005-04; Seismic Stability of Standby Liquid Control System Test Tank)

.3 Surveillance Testing Associated with Temporary Instruction 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems."

a. Inspection Scope

When reviewing SVI-E22-T2001, HPCS Pump and Valve Operability Test, the inspectors verified that the procedures were acceptable for (1) testing HPCS with power operation, shutdown operation, maintenance, and subject system modifications, (2) void determination and elimination methods, and (3) post-event evaluation.

The inspectors reviewed procedures used for conducting surveillances and determination of void volumes to ensure that the void criteria was satisfied and will be

reasonably ensured to be satisfied until the next scheduled void surveillance (Temporary Instruction (TI) 2515/177, Section 04.03.a). Also, the inspectors reviewed procedures used for filling and venting following conditions which may have introduced voids into the subject systems to verify that the procedures acceptably addressed testing for such voids and provided acceptable processes for their reduction or elimination (TI 2515/177, Section 04.03.b). Specifically, the inspectors verified that:

- gas intrusion prevention, refill, venting, monitoring, trending, evaluation, and void correction activities were acceptably controlled by approved operating procedures (TI 2515/177, Section 04.03.c.1);
- procedures ensured the system did not contain voids that may jeopardize operability (TI 2515/177, Section 04.03.c.2);
- procedures established that void criteria were satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance (TI 2515/177, Section 04.03.c.3);
- the licensee entered changes into the CAP as needed to ensure acceptable response to issues. In addition, the inspectors confirmed that a clear schedule for completion is included for CAP entries that have not been completed (TI 2515/177, Section 04.03.c.5); and
- procedures included independent verification that critical steps were completed (TI 2515/177, Section 04.03.c.6).

The inspectors verified the following with respect to surveillance and void detection:

- specified surveillance frequencies were consistent with TS SR requirements (TI 2515/177, Section 04.03.d.1);
- surveillance frequencies were stated or, when conducted more often than required by TS, the process for their determination was described (TI 2515/177, Section 04.03.d.2);
- surveillances methods were acceptably established to achieve the needed accuracy (TI 2515/177, Section 04.03.d.3);
- surveillance procedures included up-to-date acceptance criteria (TI 2515/177, Section 04.03.d.4);
- procedures included effective follow-up actions when acceptance criteria are exceeded or when trending indicates that criteria may be approached before the next scheduled surveillance (TI 2515/177, Section 04.03.d.5);
- measured void volume uncertainty was considered when comparing test data to acceptance criteria (TI 2515/177, Section 04.03.d.6);
- venting procedures and practices utilized criteria such as adequate venting durations and observing a steady stream of water (TI 2515/177, Section 04.03.d.7);
- an effective sequencing of void removal steps was followed to ensure that gas does not move into previously filled system volumes (TI 2515/177, Section 04.03.d.8);
- qualitative void assessment methods included expectations that the void will be significantly less than allowed by acceptance criteria (TI 2515/177, Section 04.03.d.9);
- venting results were trended periodically to confirm that the systems are sufficiently full of water and that the venting frequencies are adequate. The inspectors also verified that records on the quantity of gas at each location are

maintained and trended as a means of preemptively identifying degrading gas accumulations (TI 2515/177, Section 04.03.d.10);
- surveillances were conducted at any location where a void may form, including high points, dead legs, and locations under closed valves in vertical pipes (TI 2515/177, Section 04.03.d.11);
- the licensee ensured that systems were not pre-conditioned by other procedures that may cause a system to be filled, such as by testing, prior to the void surveillance (TI 2515/177, Section 04.03.d.12); and
- procedures included gas sampling for unexpected void increases if the source of the void is unknown and sampling is needed to assist in determining the source (TI 2515/177, Section 04.03.d.13).

The inspectors verified the following with respect to filling and venting:

- revisions to fill and vent procedures to address new vents or different venting sequences were acceptably accomplished (TI 2515/177, Section 04.03.e.1); and
- fill and vent procedures provided instructions to modify restoration guidance to address changes in maintenance work scope or to reflect different boundaries from those assumed in the procedure (TI 2515/177, Section 04.03.e.2).

The inspectors verified the following with respect to void control:

- void removal methods were acceptably addressed by approved procedures (TI 2515/177, Section 04.03.f.1); and
- the licensee had reasonably ensured that the high pressure core spray pump is free of damage following a gas-related event in which pump acceptance criteria was exceeded (TI 2515/177, Section 04.03.f.2).

Documents reviewed are listed in the Attachment to this report.

This inspection effort counts towards the completion of TI 2515/177, which will be closed in a later inspection report.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

Since the last NRC inspection of this program area, Emergency Plan Revision 30 and Emergency Plan Revision 31 were implemented. These documents were implemented based on the licensee's determination, in accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in effectiveness of the Plan, and that the revised Plan as changed continues to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors conducted a sampling review of the Emergency Plan changes and a review of the Emergency Action Level changes to evaluate for potential decreases in effectiveness of the Plan. However, this review does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety.

This emergency action level and emergency plan changes inspection constituted one sample as defined in IP 71114.04-05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation - Training Observation (71114.06)

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on November 15, 2010, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator (PI) data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the CAP. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the Attachment to this report.

This inspection of the licensee's training evolution with emergency preparedness drill aspects constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Cornerstone: Barrier Integrity

.1 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the Reactor Coolant System (RCS) Leakage PI for the period from the third quarter 2009 through the third quarter of 2010. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's operator logs, RCS leakage tracking data, issue reports, event reports and NRC Integrated IRs for the period of July 2009 through September 2010 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one RCS leakage PI sample as defined in IP 71151-05.

b. Findings

No findings were identified.

Cornerstone: Public Radiation Safety

.2 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specifications (RETS)/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences PI for the period of October 2009 through October 2010. The inspectors used PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates between October 2009 and October 2010 to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose.

This inspection constituted one RETS/ODCM radiological effluent occurrences PI sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

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

.1 Routine Review of Items Entered Into the CAP

a. Inspection Scope

As part of the various baseline IPs 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 CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance

issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrence reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily CR packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Selected Issue Follow-Up Inspection: Control Room Breathable Air System Leak

a. Inspection Scope

The inspectors selected the following action requests for an in-depth review:

- CR 10-77189; Control Room Breathable Air System Degrading; and
- CR 10-82522; Newly Installed Relief Valve Leaking Past Seat.

The inspectors discussed the evaluation and associated corrective actions with licensee personnel and verified the following attributes during their review of the above apparent cause evaluation:

- complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- consideration of the extent-of-condition, generic implications, common cause, and previous occurrences;

- classification and prioritization of the resolution of the problem, commensurate with safety significance;
- identification of the contributing causes of the problem; and
- identification of corrective actions, which were appropriately focused to correct the problem.

The above constitutes completion of one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to evaluate and maintain functionality assessments for the USAR described emergency air breathing system in the main control room. Specifically, during a period with a leaking relief valve on the system from July through September 2010, the licensee did not follow the process in NOP-OP-1009, Operability Determination and Functionality Assessments, by failing to write a CR when system functionality should have been questioned and documenting any functional assessment in the same CR. Additionally, during time periods when the air bottles were being changed out because of the leak, the system should have been documented as non-functional because all 10 bottles are required for the system to meet its USAR described function. Five bottles out of 10 total in the system are isolated anytime a single bottle must be changed out.

Description: During the extended period of July through September of 2010, the control room breathing air system was in service with a leaking relief valve. During this period the licensee repeatedly changed out air bottles in order to restore the available air pressure to a level that would satisfy the system requirements. Increased monitoring was also put in place to verify that the system maintained its air pressure above the required log reading level. The inspectors questioned the ability of the system, with a persistent leak, to support seven control room personnel on breathing air for 6 hours, in accordance with the stated system capabilities in the USAR.

The licensee unsuccessfully attempted repairs to the leaking relief valve in early September 2010 and again failed to conduct a functionality analysis. The system was subsequently repaired in mid-September after the procurement of a new relief valve. Perry procedure NOP-OP-1009, Operability Determinations and Functionality Assessments, requires a CR to be generated for a component found in a potentially degraded or non-functional condition. The procedure also states that the Shift Manager's review of the CR is expected to address and determine potential functionality concerns with additional information documented within the corrective action process. As a result of continued questioning of functionality by the inspectors, the licensee generated an Engineering Evaluation Request (EER) that analyzed the system functionality. The results of the EER were completed on December 16, 2010, and determined that on two specific occasions the system was below minimum pressure requirements and, therefore, not functional. The inspectors utilized the results of the EER to determine that the breathing air system leak rate exceeded the maximum leak rate which would support the USAR-required capabilities of the system.

Analysis: The inspectors determined that the licensee's failure to follow procedures in the functionality evaluation of a USAR-described system was a performance deficiency. Specifically, the licensee failed to recognize that the control room breathing air system should have been evaluated for functionality, in accordance with NOP-OP-1009, Operability Determinations and Functionality Assessments. The inspectors evaluated the performance deficiency in accordance with IMC 0612, Power Reactor Inspection Reports, Appendix B, "Issue Screening." The performance deficiency was compared to the examples in Appendix E of IMC 0612 and found to be more than minor because non-functionality of the emergency breathing air system would significantly impact the operators' ability to shutdown the reactor from the main control room. Additionally, the deficiency impacts the equipment performance attribute of the mitigating systems cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

The inspectors evaluated the finding in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," Table 3b for the Mitigating Systems cornerstone. The inspectors determined the finding was of very low risk significance because it was not a design/qualification deficiency, did not represent a loss of system safety function, did not result in a loss of function of a single train for greater than its TS-allowable outage time, did not result in a loss of function of non safety-related risk-significant equipment, and was not risk significant due to external events.

This finding was associated with a cross-cutting aspect in the resources component of the Human Performance cross-cutting area because the licensee did not maintain a system described in the USAR in a condition which would allow it to meet its described function. Specifically, operators would not be able to remain in the main control room using breathing air for the required time prescribed by the system description in the licensee USAR due to excessive leak rate from a system relief valve. (H.2(d))

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that activities affecting quality be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, from July through September 2010, the licensee failed to address a condition adverse to quality that should have been evaluated through the site corrective action process, as required by site procedures, to determine the functionality of the control room breathing air system. Because this finding is of very low safety significance and because it was entered into the licensee's CAP as CR 10-88285, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 05000440/2010005-05; Failure to Evaluate System Functionality of Control Room Breathing Air.)

.4 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors evaluated the licensee's implementation of their process used to identify, document, track, and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of the operator workarounds

(OWAs) on system availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents.

The inspectors performed a review of the cumulative effects of OWAs. The documents listed in the Attachment were reviewed to accomplish the objectives of the IP. The inspectors reviewed both current and historical operational challenge records to determine whether the licensee was identifying operator challenges at an appropriate threshold, had entered them into their CAP, and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. Additionally, all temporary modifications were reviewed to identify any potential effect on the functionality of Mitigating Systems, impaired access to equipment, or required equipment uses for which the equipment was not designed. Daily plant and equipment status logs, degraded instrument logs, and operator aids or tools being used to compensate for material deficiencies were also assessed to identify any potential sources of unidentified OWAs.

This review constituted one sample for OWAs as defined in IP 71152-05.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 (Closed) Unresolved Item (URI) 50-440/2009301-01, Two-Phase Fluid Flow Modeling for Feedwater

During onsite validation of the 2009 initial license exam at the Perry Station, the examiners noted that reactor vessel water level appeared to increase with no high pressure injection or operator intervention after emergency depressurization. With reactor pressure lowering, the reactor vessel water level swelled about 100 inches. The licensee informed the examiners that a computer software change had been made to replace an older single phase fluid flow model with a two-phase fluid flow model. This change resulted in a “flashing” of high temperature water in the number 6 feedwater heaters. This feedwater “flashing” produced the observed flow into the reactor vessel after the vessel pressure lowered to the saturation pressure of the water in the number 6 feedwater heaters.

The examiners verified that the simulator met the requirements of 10 CFR 55.46(c) for the administration of the operating test. However, being concerned about the magnitude of the level swell observed, this issue was considered an URI (50-40/2009301-01) pending further review by NRC headquarters operations staff.

In consultation with NRC headquarters operations staff, it was generally agreed that a two-phase fluid flow model should result in a better prediction of feedwater flow during rapid depressurizations than a single phase model. This is assuming the system is properly modeled. Therefore, it was decided that the regional inspectors should review

the actual simulator modeling of the Perry feedwater system. If the model was found to be an accurate representation of the actual plant configuration the URI could be closed.

During the 2010 operator requalification inspection, regional NRC inspectors reviewed the feedwater system nodalization input into the simulator modeling; the detailed mass changes that occur in the feedwater system simulator modeling during a rapid depressurization; and the corrective action records associated with the investigation of the simulator feedwater flow response after the two-phase fluid flow model was implemented. Following additional consulting with NRC headquarters operations staff, the inspectors determined that the modeled feedwater system adequately represented the actual plant configuration. Additionally, the level rise observed by NRC examiners during the validation of the 2009 initial license examination was determined to be a reasonable representation of the effect of a rapid depressurization. Therefore, no violation of NRC requirements occurred, and this URI was closed with no finding. Documents reviewed are listed in the Attachment to this report.

.2 (Open) NRC Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)"

As documented in Section 1R22, the inspectors confirmed the acceptability of the described licensee actions. This inspection effort counts towards the completion of TI 2515/177, which will be closed in a later inspection report.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to the Plant General Manager, Mr. Kurt Krueger, and other members of licensee management on January 20, 2011. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exits were conducted for:

- the results of the RETS/ODCM PI verification inspection with Mr. J. Pelcic on November 5, 2010;
- the annual review of Emergency Action Level and Emergency Plan changes with the licensee's Emergency Preparedness Manager, Mr. R. Smith, via telephone on December 8, 2010;
- the results of the LORT program inspection with the Plant General Manager, Mr. K. Krueger, on December 3, 2010; and
- the LORT biennial written examination and annual operating test results with the Licensed Operator Requalification Supervisor, Mr. M. Brogan, via telephone on December 29, 2010.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspections was returned to the licensee.

4OA7 Licensee Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy, for being dispositioned as an NCV.

- On November 16, 2010, the licensee identified a failure to meet the requirements of TS 3.0.2 by failing to enter Condition A of TS 3.8.1, AC Sources - Operating when the system was made inoperable. The licensee identified the missed TS entry after the Completion Time of Required Action A.1 had already expired. The licensee then entered Condition F, which required a plant shutdown within the next 12 hours. The cause was a failure to follow written procedures as well as inadequate communications regarding safety-related equipment. Corrective actions included entry into TS 3.8.1 Conditions A and F, completion of the surveillance to satisfy Condition A and subsequent exit from the shutdown requirement of Condition F. The violation was determined to be of very low safety significance. The licensee entered this performance deficiency in the CAP as CR 10-85870.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Bezilla, Vice President Nuclear
K. Krueger, Plant General Manager
R. Coad, Regulatory Compliance Manager
D. Evans, Work and Outage Management Director
J. Grabnar, Site Engineering Director
H. Hanson, Performance Improvement Director
T. Jardine, Operations Manager
P. McNulty, Radiation Protection Manager
A. Mueller, Training Manager
M. Stevens, Maintenance Director
J. Tufts, Chemistry Manager

NRC

N. Valos, Senior Reactor Analyst
A. Garmoe, Project Engineer

LIST OF ITEMS OPENED, CLOSED, DISCUSSED

Opened and Closed

05000440/2010005-01	NCV	Failure to Follow Procedures Results in Unplanned Half Scram (Section 1R12)
05000440/2010005-02	NCV	Unacceptable Preconditioning of HPCS Suction and Pump Minimum Flow Valves Prior to ASME Inservice Testing (Section 1R13)
05000440/2010005-03	NCV	Unacceptable Preconditioning of HPCS Valve Prior to ASME Inservice Testing (Section 1R22.1.b.1)
05000440/2010005-05	NCV	Failure to Evaluate System Functionality of Control Room Breathing Air (Section 4OA2.3)

Opened

05000440/2010005-04	URI	Seismic Stability of Standby Liquid Control Test Tank (Section 1R22.1.b.2)

Closed

05000440/2009301-01	URI	Two-Phase Fluid Flow Modeling for Feedwater (Section 4OA5.1)

Discussed

2515/177	TI	Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01) (Section 4OA5.2)

LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather that selected sections or portions 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.

1R01 Adverse Weather

- ONI-ZZZ-1; Tornado or High Winds; Revision 11
- eSOMS Narrative Logs dated October 26, 2010
- NOP-WM-2001; Work Management Scheduling/Assessment/Seasonal Readiness Processes; Revision 10
- IOI-15; Seasonal Variations; Revision 18
- PTI-M99-P0001; Ambient Temperature Monitoring; Revision 5
- CR 10-85446; Winter Readiness Orders Not Completed Within the Stated Procedure Time Frame; dated November 3, 2010
- Licensee List of 2010 Winter Prep Orders; dated October 20, 2010
- PTI-Gen-P0026; Preparations for Winter Operation; Revision 6
- PTI-Gen-P0027; Cold Weather Support System Startup; Revision 12

1R04 Equipment Alignment

- VLI-P45; Emergency Service Water System Valve Lineup Instruction; Revision 10
- SOI-P45/49; Emergency Service Water and Screen Wash Systems System Operating Instruction; Revision 17
- CR 10-78917; ESW Sluice Gate Backup Bottle Pressure Low Out of Spec; dated June 26, 2010
- Drawing 302-0792-00000; Emergency Service Water System; Revision LL
- Drawing 302-0791-00000; Emergency Service Water System; Revision SS
- VLI-E51; Reactor Core Isolation Cooling System Valve Lineup Instruction; Revision 8
- Drawing 302-0632-00000; Reactor Core Isolation Cooling System; Revision LL
- Drawing 302-0631-00000; Reactor Core Isolation Cooling System; Revision DD
- SOI-R43; Division 1 and 2 Diesel Generator System; Revision 36
- SOI-R45; Division 1 and 2 Diesel Generator Fuel Oil System; Revision 14
- SOI-R46; Division 1 and 2 Diesel Generator Jacket Water System; Revision 13
- SOI-R47; Division 1 and 2 Diesel Generator Lube Oil Systems; Revision 7
- VLI-R44; Division 1 and 2 Diesel Generator Starting Air System (Unit 1); Revision 4
- VLI-R46; Division 1 and 2 Diesel Generator Jacket Water Systems (Unit 1); Revision 4
- Drawing 302-0346-00000; Standby Diesel Engine Mounted Piping, Revision E
- Drawing 302-0351-00000; Standby Diesel Generator Starting Air; Revision BB
- Drawing 302-0352-00000; Standby Diesel Generator Fuel Oil System; Revision GG
- Drawing 302-0353-00000; Standby Diesel Generator Lube Oil; Revision S
- Drawing 302-0354-00000; Standby Diesel Generator Jacket Water; Revision U
- Drawing 302-0355-00000; Standby Diesel Generator Exhaust, Intake and Crankcase; Revision W

1R05 Fire Protection (Annual/Quarterly)

- PAP-1910; Fire Protection Program; Revision 19
- FPI-0EW; Pre-Fire Plan Instruction – Emergency Service Water Pumphouse; Revision 4
- FPI-0FH; Pre-Fire Plan Instruction – Fuel Handling Building; Revision 4
- FPI-SB; Pre-Fire Plan Instruction – Service Building; Revision 2
- FPI-0CC; Pre-Fire Plan Instruction – Control Complex; Revision 8
- FPI-1DG; Pre-Fire Plan Instruction – Diesel Generator Building; Revision 6
- CR 10-86613; Unfilled P45 System Penetration Found in 3 Hour Fire Wall; dated December 3, 2010

1R06 Internal Flooding

- PAP-0204; Housekeeping/Cleanliness Control Program; Revision 24
- NOP-OP-1012; Material Readiness and Housekeeping Inspection Program; Revision 5
- CR 10-85380; 2010 NRC PI&R: ESW "C" Loop Discharge Strainer Concrete Pedestal; dated November 3, 2010
- CR 10-86084; 2010 PI&R: Excessive Leakage from ESW A Pump Packing Leak-off Line; dated November 19, 2010
- CR 10-86304; Electrical Penetration Leaking Water onto Div I Cable Tray; dated November 26, 2010

1R11 Licensed Operator Requalification Program

- PYBP-PTS-0005; Operator Continuing Training Program Administration; Revision 28
- PYBP-POS-0027; Operator Actions from Memory; Revision 0
- Simulator Exercise Guide OT-3070-PC5D; Annual Requal Exam Scenario; Revision 1; dated October 30, 2003
- Annual-Biennial Licensed Operator Requalification Examination Sample Plan
- 2010 Biennial RO written examinations: Weeks 4 and 6
- 2010 Biennial SRO written examinations: Weeks 4 and 6
- 2010 Operating Test JPMs for Weeks 4 and 6
- 2010 Operating Test Scenarios for Weeks 4 and 6
- TMA-4206; Licensed Operator Requalification Programs; Revision 12
- NOBP-TR-1112; FENOC Conduct of Simulator Training; Revision 0
- NOP-OP-1002; Conduct of Operations; Revision 5
- EOP-01A; Level Power Control Bases; Revision 0
- PYBP-PTS-0005; Operator Continuing Training Program Administration; Revision 28
- PYBP-PTS-0007; Simulator Scenario Guide
- PYBP-PTS-0015; Job Performance Measure Guide
- PYBP-PTS-0033; Simulator Configuration Control
- 2009 thru 2010 Completed Simulator Testing Packages (various Attachments to PYBP-PTS-0033)
- NOBP-OP-0003, Operations Crew Performance Evaluations; Revision 1
- 2009 thru 2010 Remedial Training Plans; Various Dates
- Open Simulator Work Orders (as of November 29, 2010); various dates from 2007 through 2010
- Cycle Review Agendas, 2009-05 through 2010-11
- Curriculum Review Committee Meeting Minutes, 2/3/2010 and 4/14/2010
- Corporate Assessment Report, CA-SA-10-05
- Snapshot Assessment, SN-SA-09-05-057

- Fleet Oversight Audit Report, MS-C-09-05-17
- Lesson Plan, RFO-12 Design Changes
- Lesson Plan, Refueling Administration RFO-12
- Lesson Plan, Emergency Closed Cooling
- CR 07-25500, Simulator Feed Water Injection Following Emergency Depressurization; dated August 22, 2007
- CR 08-32462, Evaluate Method of Terminating Injection to RPV during an ATWS; dated January 3, 2008
- CR 08-33130, Evaluate if Feedwater is Available after a PRV Emergency Depressurization; dated January 10, 2008

1R12 Maintenance Effectiveness

- CR 10-85546; Delay Encountered Due to Planning, Scheduling, and Clearance Conflicts (Div. 2); dated November 8, 2010
- CR 10-85566; Division DG Outage Lesson Learned; dated November 9, 2010
- CR 10-85571;Division 2 AOT Schedule Revisions – First Day of the Outage; dated November 8, 2010
- CR 10-85703; Unsat Div II Fuel Oil Tank Internal Surface Coating Inspection; dated November 11, 2010
- CR 10-85720;Chemistry Activities During the Division 2 AOT Were Not Well Identified; dated November 11, 2010
- CR 10-85725; Restoration of EH1201 DIV 2 D/G Output Breaker Was Improperly Scheduled; dated November 11, 2010
- CR 10-86209; Risk Assessment Not Documented Prior to Div 2 DG Becoming Inop for J/W Work; dated November 23, 2010
- CR 10-86289; Half Scram Occurred During Restoration of SVI-C51-T0030G; dated November 24, 2010
- NOP-SS-3000; Document Hierarchy; Revision 0
- NOBP-SS-3401; Policy, Program Manual, Business Practice, and Reference Material Development, Review, and Approval; Revision 9
- NOBP-ER-3399; Fleet Circuit Card and Power Supply Burn-in Guide; Revision 0
- SVI-C51-T0030-G; IRM G Neutron Flux Trips Channel Calibration for 1C51-K601G; Revision 6
- WO 200404427; “New PM” Replace APRM 15V Regulator Cards Z48, Z425, and Z427; dated November 24, 2010
- WO 200437809; Half SCRAM During Restoration APRM G; dated November 25, 2010

1R13 Maintenance Risk Assessments and Emergent Work Control

- CR 10-83676; Potential Conservatism in Safety Monitor; dated October 5, 2010
- PDB-C0011; PSA Pre-Solved Configurations for Online Risk; Revision 4
- NOP-OP-1007; Risk Management; Revision 8
- CR 10-80950; MS-C-10-07-07: Changes in Risk Determinations Identified During Work Execution; dated August 9, 2010
- CR 10-78663; Power Supply Checks Work Stopped Due to Risk Involved in Activity; dated June 22, 2010
- PAP-0205; Operability of Plant Systems; Revision 19
- NOP-OP-1009; Operability Determinations and Functionality Assessments; Revision 2
- CR 10-74061; Potential Vulnerability Declaring Systems and/or Components Available; dated March 25, 2010
- PAP-1924; Risk-Informed Safety Assessments and Risk Management; Revision 5

- Plant Narrative Logs; dated October 5, 2010, through October 7, 2010
- Forecast On-Line Probabilistic Risk Assessment; Period 6 Week 2, Oct 4, 2010, through Oct 10, 2010; Revision 2
- Division 1 Outage Protected Equipment Posting Checklist; dated October 4, 2010
- CR 10-84915; NRC-Identified Concern - Potential Preconditioning of Valves During SVI-E22-T2001; dated October 26, 2010
- CR 10-84832; Scheduling Improvement to Prevent Potential MOV Preconditioning; dated October 23, 2010

1R15 Operability Evaluations

- CR 10-84535; HPCS Pump Suction Pressure Trended Up Eventually Pegging High; dated October 19, 2010
- CR 10-84604; 1.5 Gallons of Non safety Oil Was Used on Safety Related RCIC Turbine; dated October 20, 2010
- CR 10-84615; High Pressure Core Spray Piping Exceeded Design Pressure; dated October 20, 2010
- CR 10-84644; Investigate Leakage into the HPCS Suction Piping with SPCU Demin in Service; dated October 19, 2010
- CR 10-84662; Commercial Grade Oil and Non-Safety Oil; dated October 21, 2010
- eSoms Narrative Logs; dated October 19 – 21, 2010
- CR 10-85972; Div 2 D/G Jacket Water Leak; dated November 17, 2010
- CR 09-52916; Division 2 Diesel Generator Jacket Water Leak From Left Bank Cylinder 6; dated February 1, 2009
- CR 10-85716; Loss of Instrument Air Response May Not Conform with USAR; dated November 11, 2010
- SOI-M23/24; MCC, Switchgear, and Miscellaneous Electrical Equipment Area HVAC System; Revision 10
- ONI-P52; Loss of Service and/or Instrument Air; Revision 15
- CR 10-86139; Division 2 DG Jacket Water Leak Elevated During DG Run; dated November 1, 2010

1R18 Permanent/Temporary Modifications

- Perry Plant Health Report 2010-2 for Temporary Modifications
- NOP-CC-2003; Engineering Changes; Revision 14
- NORM-CC-2001; Engineering Change Process Flowcharts; Revision 00
- ECP 09-0793-000; Reference Documents – Temp Mod - Temporary T/C Cable to CST Tank Piping, Revision 0
- ECP 09-0793-001; Install Temp Mod – Install Temporary T/C Wire from CST Tank Piping to 1R36P0001 Control Panel; Revision 0
- ECP 09-0793-002; Remove Temp Mod – Remove Temporary T/C Wire from CST Tank Piping to 1R36P0001 Control Panel; Revision 0
- WO 200342442; Circuit 5 Indicates an Open Thermocouple; dated November 29, 2010
- Drawing 217-0118-00003; Heat Trace Pnl 1R36P0001; Revision J
- Drawing 217-0103-00003; Heat Trace Cond Transfer & Storage; Revision L
- Drawing 217-0102-00001; Heat Trace –CCP Panel Arrangement; Revision P
- CR 10-84999; Wiring Issues for Cable Replacement on CST Heat Trace Panel; dated October 27, 2010
- ECP 08-0183-000; Reference Documents - Temporary Skid and Temporary Cross-Tie Piping for Injection of Noble Chem into Perry's Feedwater System; Revisions 04 and 06

- ECP 08-0183-005; Install Temporary Skid and Temporary Cross-Tie Piping for Injection of Noble Chem into Perry's Feedwater System; Revision 00
- ECP 08-0183-006; Removal - Temporary Skid and Temporary Cross-Tie Piping for Injection of Noble Chem into Perry's Feedwater System; Revision 01
- CR 10-86755; On Line Noble Chemistry Installed Past the TM Expiration Date; dated December 7, 2010
- ECP 09-0730-001; ECP to Resolve the Fault on the ESW 'B' Motor Cable; Revision 2

1R19 Post-Maintenance Testing

- WO 200333314; CC – MERP Replace Utility Station with NUS; dated October 4, 2010
- CR 10-83659; Controller Post Maintenance Failed Functional Test; dated October 5, 2010
- CR 09-65662; Replacement NUS Utility Stations Scaling Were not Verified to be Correct; dated October 9, 2009
- PERP 00066; Part/Component Equivalent Replacement Package—Bailey 720 Utility Station Equivalence Review to NUS UTS 2000-750-05/N Utility Station; Revision 2
- WO 200402137; SVI-M15T3015, Canister Sample Method; dated December 21, 2010
- SVI-M15-T1240-B; Annulus Exhaust Gas Treatment System Train B Flow and Filter Operability Test; Revision 6
- CR 10-87457; NRC Questions of AEGTS B During SVI; dated December 22, 2010
- CR 10-87456; Work Performed on Contaminated System Without RP Approval; dated December 22, 2010
- CR 10-83826; Issues with Contact Status During EH1102 PMT Cell Switch Checks; dated October 6, 2010
- WO 200290555; Calibrate 87G Relay for Div 1 EDG Output Breaker EH1102; dated October 5, 2010
- WO 200393373; Exercise and Service Breaker EH1102, Add #A2; dated October 3, 2010
- CR 10-85242; EH1114 Failed GEI-135 Section 5.12.3; dated November 1, 2010
- CR 10-86035; Second Deferral for Breaker EH1303 Maintenance; dated November 18, 2010
- SVI-E22-T1319; Diesel Generator Start and Load Division 3, Revision 16
- WO 200393382; Exercise and Service Breaker EH1114 (Routine); Add #A4; dated November 2, 2010
- SOI-E51; Reactor Core Isolation Cooling System; Revision 28

1R22 Surveillance Testing

- WO 200405998; 31D Diesel Generator Start and Load Division 3; dated October 19, 2010
- SVI-E22-T1319; Surveillance Instruction: Diesel Generator Start and Load Division 3; Revision 15
- SVI-E22-T2001; HPCS Pump and Valve Operability Test; Revision 23
- SVI-E22-T1183; HPCS Valve Lineup Verification and System Venting; Revision 11
- SVI-E22-T2004; HPCS Pump Suction Check Valves Operability Test (1E22-F002, 1E22-F016); Revision 9
- CR 10-84832; Scheduling Improvement to Prevent Potential MOV Preconditioning; dated October 23, 2010
- CR 10-85341; NRC Identified - Potential Pre-conditioning during SVI-E22-T2001; dated November 3, 2010
- eSoms Narrative Logs; dated October 23, 2010
- PSI-TSR; Plant Round Instruction / Technical Specification Rounds; Revision 23
- OAI-1702; Operations Section Rounds Sheets, Logs, and Records; Revision 9

- SVI-E31-T0374; Reactor Coolant System Unidentified Leakage Determination; Revision 4
- SVI-E31-T0375; Drywell Floor Drain Sump Monitoring System Channel Functional for 1E31-K606; Revision 9
- SVI-C41-T2001-B; Standby Liquid Control “B” Pump and Valve Operability Test; Revision 15
- SVI-C71-T0051; Reactor Protection System Manual Scram Channel Functional; Revision 7

1EP4 Emergency Action Level and Emergency Plan Changes

- Emergency Plan Revision 30
- Emergency Plan Revision 31

1EP6 Drill Evaluation - Training Observation

- Simulator Exercise Guide OT-3070-PC5D; Annual Requal Exam Scenario; Revision 1; dated October 30, 2003

4OA1 Performance Indicator Verification

- NOBP-LP-4012; NRC Performance Indicators; Revision 3
- NOBP-LP-4012-10; Data Sheets for Reactor Coolant System Leakage from July 2009 to September 2010; Revision 2
- CR 09-62153; Total Drywell Sump Inleakage Exceeds Action Level 2 Criteria; dated July 22, 2009
- CHI-0007; Radiological Effluent Data Reduction; Revision 13
- NOBP-LP-4012; NRC Performance Indicators; Revision 03
- Submittals for Perry Performance Indicator Occurrences; various dates 2010

4OA2 Identification and Resolution of Problems

- CR 10-77189; Control Room Breathable Air System Degrading; dated May 21, 2010
- CR 10-82522; Newly Installed Relief Valve Leaking Past Seat; dated September 12, 2010
- CR 10-85217; CR Breathable Air System High Pressure Relief Valves not ASME Valves; dated October 29, 2010
- NOP-OP-1009; Operability Determinations and Functionality Assessments; Revision 2
- EER 600646217; Control Room Breathable Air; dated December 16, 2010

4OA7 Licensee Identified Violations

- CR 10-85870; Late Tech Spec Entry; dated November 16, 2010
- CR 10-85970; PYBP-POS-2-1 Crew Debrief For Missed 1HR Tech Spec Action (SVI-R10-T5227); dated November 17, 2010

LIST OF ACRONYMS USED

AC	alternating current
APRM	average power range monitor
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CFR	*Code of Federal Regulations*
CR	condition report
CST	condensate storage tank
DG	diesel generator
ECP	Engineering Change Package
EDG	emergency diesel generator
EER	Engineering Evaluation Request
ESW	emergency service water
FENOC	FirstEnergy Nuclear Operating Company
HPCS	high-pressure core spray
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
IST	inservice testing
JPM	job performance measure
LORT	Licensed Operator Requalification Training
NCV	non-cited violation
NEI	Nuclear Energy Institute
NOP	Nuclear Operating Procedure
NRC	Nuclear Regulatory Commission
ONI	Off-normal Instruction
OWA	operator workaround
PI	performance indicator
PM	post-maintenance
RCIC	reactor core isolation cooling
RCS	reactor coolant system
RETS/ODCM	Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual
SAT	Systems Approach to Training
SDP	Significance Determination Process
SLC	standby liquid control
SP	suppression pool
SPAR	Standardized Plant Analysis Risk
SRA	Senior Reactor Analyst
SSC	structure, system, and component
SVI	Surveillance Instruction
TI	Temporary Instruction
TS	Technical Specification
URI	unresolved item
USAR	Updated Safety Analysis Report
WO	work order

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Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 6
Division of Reactor Projects

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Letter to M. Bezilla from J. Cameron dated February 1, 2011.

SUBJECT: PERRY NUCLEAR POWER PLANT NRC INTEGRATED INSPECTION REPORT 05000440/2010005

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