



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

January 31, 2011

Mr. Michael J. Pacilio
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO), Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION INTEGRATED INSPECTION REPORT
05000461/2010-005

Dear Mr. Pacilio:

On December 31, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Clinton Power Station. The enclosed report documents the results of this inspection, which were discussed on January 13, 2011, with Mr. M. Kanavos, and other members of your staff.

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

Based on the results of this inspection, one NRC-identified finding and one self-revealed finding of very low safety significance were identified. One of the findings involved a violation of NRC requirements. However, because of its very low safety significance, and because the issue was entered into your corrective action program, the NRC is treating the issue as a Non-Cited Violation (NCV) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of this NCV, 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 Clinton Power Station. In addition, if you disagree with the cross-cutting aspect 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 Clinton Power Station.

M. Pacilio

-2-

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

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

Docket No. 50-461
License No. NPF-62

Enclosure: Inspection Report 05000461/2010-005;
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-561
License No: NPF-62

Report No: 05000461/2010-005

Licensee: Exelon Generation Company, LLC

Facility: Clinton Power Station

Location: Clinton, IL

Dates: October 1 through December 31, 2010

Inspectors: D. Lords, Acting Senior Resident Inspector
A. Scarbeary, Acting Resident Inspector
D. McNeil, Senior Operations Engineer
S. Mischke, Resident Inspector, Illinois Emergency
Management Agency

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

Enclosure

TABLE OF CONTENTS

| | |
|--|----|
| SUMMARY OF FINDINGS | 1 |
| REPORT DETAILS | 3 |
| Summary of Plant Status..... | 3 |
| 1. REACTOR SAFETY | 3 |
| 1R01 Adverse Weather Protection (71111.01)..... | 3 |
| 1R04 Equipment Alignment (71111.04)..... | 3 |
| 1R05 Fire Protection (71111.05) | 4 |
| 1R06 Flooding Protection Measures (71111.06)..... | 8 |
| 1R11 Licensed Operator Requalification Program (71111.11)..... | 8 |
| 1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13) | 9 |
| 1R15 Operability Evaluations (71111.15)..... | 10 |
| 1R19 Post-Maintenance Testing (PMT) (71111.19)..... | 10 |
| 1R22 Surveillance Testing (71111.22) | 11 |
| 4. OTHER ACTIVITIES..... | 12 |
| 4OA1 Performance Indicator Verification (71151)..... | 12 |
| 4OA2 Identification and Resolution of Problems (71152) | 12 |
| 4OA5 Other Activities | 14 |
| 4OA6 Management Meetings..... | 17 |
| SUPPLEMENTAL INFORMATION | 1 |
| Key Points of Contact..... | 1 |
| List of Items Opened, Closed and Discussed..... | 2 |
| List of Documents Reviewed..... | 3 |
| List of Acronyms Used | 9 |

SUMMARY OF FINDINGS

IR 05000461/2010-005, 10/01/10 – 12/31/10; Clinton Power Station, Unit 1; Fire Protection, Other Activities.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors. One of the findings had an associated Non-Cited Violation (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. On November 30, 2010, the inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of the Clinton Power Station Unit 1 Operating License (NPF-62, Section 2.F). The licensee failed to implement the Fire Protection Program in accordance with program requirements by failing to follow approved Fire Protection Program procedures for the control of transient combustible materials. The licensee promptly removed the transient combustible materials found by the inspectors.

The inspectors concluded that this finding could be reasonably viewed as a precursor to a significant event (i.e., a fire affecting more than one train of safe shutdown equipment). Specifically, the presence of transient combustible materials in a combustible free zone could reasonably result in degradation of the fire protection defense-in-depth elements in place to prevent fires from starting and to mitigate the consequences of fires. In addition, based on review of Example 4k in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," the issue would be considered to be of more than minor significance because the identified transient combustibles were found in a combustible free zone required for separation of redundant trains. The finding was of very low safety significance because the items found in the combustible free zone would not be considered transient combustibles of significance as defined in IMC 0609, Appendix F, "Fire Protection Significance Determination Process," Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," and, therefore, the issue was assigned a "low degradation" rating. The inspectors concluded that this finding affected the cross-cutting area of human performance. Specifically, the licensee failed to recognize that moving a bullet-resistant container (BRC) was an infrequent activity and, as such, a pre-job briefing should have been performed and was not. In addition, a questioning attitude was not cultivated by the licensee once the correct location of the BRC was challenged such that security staff proceeded in the face of uncertainty. Therefore, the inspectors concluded that the licensee's work practices that support human performance were less than effective. (IMC 0310 H.4(a)) (Section 1R05.1.b.(1))

Cornerstone: Barrier Integrity

- Green. A finding of very low safety significance was self-revealed on August 24, 2010, when the Reactor Water Cleanup (RT) System return line outboard primary containment isolation valve went closed. Many other unintended valve repositioning events occurred from August 25 through August 26, 2010. The licensee failed to perform preventive maintenance on the Division 1 Self Test System (STS) safety-related 5 Volt (V) power supply. As a result, a degraded voltage condition existed in the test circuit, which was identified as the cause for the above valve repositioning events. As a corrective action, the licensee has since installed a temporary plant modification of dual 5 V power supplies for all four divisions of the STS. No violation of regulatory requirements was identified.

The finding was of more than minor significance because the failure to perform preventative maintenance on critical components, if left uncorrected, would potentially lead to a more significant safety concern. This finding was of very low safety significance based on answering “no” to each of the Phase 1 screening questions identified in the Containment Barrier column of Table 4a in Attachment 0609.04, “Phase 1 - Initial Screening and Characterization of Findings.” The inspectors concluded that this finding affected the cross-cutting area of human performance. Specifically, in the area of resources, the licensee did not adequately maintain long-term plant safety by the maintenance of design margins, minimizing preventive maintenance deferrals, and ensuring maintenance and engineering backlogs are low enough to support safety. (IMC 0310 H.2(a)) (Section 4OA5.1)

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

Summary of Plant Status

Unit 1 was operated at or near full power during the inspection period with one exception. On December 5, 2010, the licensee reduced power to about 70 percent to perform control rod sequence exchange and main turbine control/intermediate valve and main steam isolation valve testing. The unit was returned to full power later the same day upon completion of testing.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness For Impending Cold Weather Conditions

a. Inspection Scope

The inspectors evaluated the licensee's preparations for cold weather conditions, focusing on the Circulating Water System and the Auxiliary Building Ventilation System. The inspectors focused on plant-specific design features and implementation of procedures for responding to or mitigating the effects of cold weather conditions on the operation of the plant. The inspectors reviewed system health reports and system engineering winter readiness review documents for the above systems. Additionally, the inspectors reviewed selected action requests for the identification and resolution of procedure and equipment deficiencies associated with adverse weather mitigation.

This inspection constituted one seasonal extreme weather readiness inspection sample as defined in Inspection Procedure (IP) 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns (71111.04Q)

a. Inspection Scope

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

- Off Gas System Train A;
- Standby Gas Treatment Train A; and
- Division 3 Shutdown Service Water.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones. The inspectors reviewed operating procedures, system diagrams, Technical Specification (TS) requirements, and the impact of ongoing work activities on redundant trains of equipment. The inspectors verified that conditions did

not exist 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 were aligned correctly and available as necessary.

In addition, the inspectors verified that equipment alignment problems were entered into the licensee's corrective action program (CAP) with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted three partial system walkdown inspection samples as defined in IP 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors performed fire protection tours in the following plant areas:

- Fire Zone CB-1b, General Access Area and Common Station Heating Ventilation and Air Conditioning Vent – Elevations 720'0", 699'0" through 935'6";
- Fire Zones A-2b, A-3a, A-3b, Residual Heat Removal 'A', 'B', and 'C' Pump Rooms - Elevation 707'0";
- Fire Zone CB-5b, Division 3 Battery Room – Elevation 781'0"; and
- Fire Zones R-1h and R-1i, Radwaste General Access Areas – Elevations 720'6" and 737'0".

The inspectors verified that transient combustibles and ignition sources were appropriately controlled and assessed the material condition of fire suppression systems, manual firefighting equipment, smoke detection systems, fire barriers and emergency lighting units. 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; that the licensee's fire plan was in alignment with actual conditions; and that fire doors, dampers, and penetration seals appeared to be in satisfactory condition.

In addition, the inspectors verified that fire protection related problems were entered into the licensee's CAP with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted four quarterly fire protection inspection samples as defined in IP 71111.05AQ.

b. Findings

(1) Failure to Control Transient Combustible Materials in Accordance with Fire Protection Program

Introduction

The inspectors identified a finding of very low safety significance (Green) with an associated Non-Cited Violation of the Clinton Power Station Unit 1 Operating License (NPF-62, Condition 2.F). The licensee failed to implement the Fire Protection Program in accordance with program requirements by failing to follow approved Fire Protection Program procedures for the control of transient combustible materials.

Discussion

On November 30, 2010, with Unit 1 operating in Mode 1, the inspectors identified a bullet-resistant container (BRC) located near the containment equipment hatch in the Fuel Building on the 737' Elevation (Fire Zone F-1m). The BRC contained combustible items (a plastic storage container, a cloth curtain, plastic wheels, and other miscellaneous plastic items). The area in which these transient combustible items were found contained highly visible red paint on the floor and markings indicating the area to be a "Combustible Free Zone" as described in the Clinton Power Station Fire Protection Evaluation Report (Updated Final Safety Analysis Report (UFSAR), Appendix E) or, alternatively, a "Transient Combustible Free Zone" (TCFZ) as described in OP-AA-201-009, "Control of Transient Combustible Material," Attachment 5, "Clinton-Station Specific Information." As stipulated in Attachment 5 of OP-AA-201-009, the placement of transient combustible materials in these areas without prior approval, in the form of a Transient Combustible Permit (TCP) and Plant Barrier Impairment, and additional compensatory measures is prohibited in Modes 1, 2, and 3. Neither a TCP nor a Plant Barrier Impairment was approved for these transient combustible items and no compensatory measures had been established. The procedure further stated that the TCFZs at Clinton Power Station are provided for the purpose of separating redundant safe shutdown equipment. According to the Fire Protection Evaluation Report, redundant safe shutdown equipment of concern for the Fuel Building 737' Elevation General Access Area include: Division 1 control panels, reactor core isolation cooling storage tank instrument panels, Division 1 and 2 valves, and Division 1, 2, and 3 cable trays. Upon discovery, the inspectors promptly notified the licensee and compensatory measures were established until the BRC was removed from the TCFZ. The combustible items associated with the BRC were determined to be Class A materials as defined in OP-AA-201-009. The BRC was moved into the TCFZ by plant security staff at approximately 11:30 a.m. on November 30th and was removed at approximately 1:30 p.m. the same day.

The inspectors reviewed the licensee's cause evaluation of this issue. The licensee concluded that the Security Shift Supervisor failed to recognize the need to conduct a pre-job briefing prior to directing the BRC to be moved and, in the absence of doing so, assumed that the Security Lead assigned to oversee the re-location of the BRC knew the correct location. There was not sufficient supervisory challenge to ensure those assigned to move the BRC knew the correct location. Additionally, when a security officer, assigned to re-locate the BRC, fostered a good questioning attitude, the Security Lead did not stop the work evolution to verify assumptions. If the Security Lead

utilized stop work criteria and asked the applicable questions that the security officer had presented, the licensee concluded that this event would have been avoided. The licensee's evaluation followed the format of a Quick Human Performance Investigation.

Analysis

The inspectors determined that this failure to follow the procedural requirements of the Clinton Power Station's Fire Protection Program was a licensee performance deficiency warranting a significance evaluation. The inspectors assessed this issue using the Significance Determination Process (SDP). The inspectors reviewed the examples of minor issues in Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and found one example related to this issue. Example 4k described a situation where a licensee had not followed the requirements of its Fire Protection Plan with respect to the control of transient combustible materials. In this example, the issue would be considered to be of more than minor significance if the identified transient combustibles were in a combustible free zone required for separation of redundant trains. In addition, consistent with the guidance in IMC 0612, Appendix B, "Issue Screening," the inspectors determined that this failure to follow Fire Protection Program procedural requirements could be reasonably viewed as a precursor to a significant event (i.e., a fire affecting more than one train of safe shutdown equipment). Specifically, the presence of transient combustible materials in a combustible free zone could reasonably result in degradation of the fire protection defense-in-depth elements in place to prevent fires from starting and mitigate the consequences of fires. This finding was associated with the Initiating Events Cornerstone.

The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609, Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings." In accordance with Table 3b, "SDP Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones," the inspectors determined that this finding affected the fire protection defense-in-depth strategies involving fire prevention and administrative controls. Therefore, the inspectors performed a review of this finding using the guidance provided in IMC 0609, Appendix F, "Fire Protection Significance Determination Process." In Step 1.1, the inspectors determined that this issue involved the finding category of "Fire Prevention and Administrative Controls." In Step 1.2, the inspectors referenced IMC 0609, Appendix F, Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," and assigned a "low degradation" rating to this finding involving the licensee's combustible controls program. The inspectors' conclusion was based on the fact that the items found in the TCFZ would not be considered transient combustibles of significance. The attachment defines transient combustibles of significance as low flash point liquids (below 200°F) and self-igniting combustibles (oily rags). The materials found were Class A combustibles (plastic and cloth). Therefore, in Step 1.3, the inspectors determined that this finding was a licensee performance deficiency of very low safety significance (Green) because the issue was assigned a "low degradation" rating.

Cross-Cutting Aspects

The inspectors concluded that the primary cause of this finding was related to the cross-cutting area of human performance. Specifically, the licensee failed to recognize that moving the BRC was an infrequent activity and, as such, a pre-job briefing should have been performed and was not. In addition, a questioning attitude was not cultivated by the licensee once the correct location of the BRC was challenged such that security staff proceeded in the face of uncertainty. Therefore, the inspectors concluded that the licensee's work practices that support human performance were less than effective. (IMC 0310 H.4(a))

Enforcement

The Clinton Power Station Unit 1 Operating License (NPF-62), Condition 2.F requires, in part, that the licensee implement and maintain in effect all provisions of the approved Fire Protection Program as described in the Final Safety Analysis Report as amended, and as approved in the Safety Evaluation Report (NUREG-0853), dated February 1982, and Supplement Numbers 1 through 8.

The Clinton Power Station UFSAR, Appendix E, "Fire Protection Evaluation Report," Section 4.0, "Compliance with Branch Technical Position (BTP) APCS 9.5-1, Appendix A, Plants Under Construction and Operating Plants," contains the overall program requirements of the licensee's Fire Protection Program. Paragraph C.2, "Instructions, Procedures, and Drawings" states, in part, that administrative controls that govern the Fire Protection Program should be prescribed by documented instructions, procedures, or drawings and should be accomplished in accordance with these documents. OP-AA-201-009, "Control of Transient Combustible Material," Revision 11, prescribes the licensee's administrative controls governing the control of transient combustible materials at Clinton Power Station. OP-AA-201-009, Attachment 5, "Clinton Station Specific Information," Step 1 requires, in part, that authorization be obtained from the Fire Marshall or designee in the form of a TCP prior to staging or storing exposed Class A combustibles or any Class B combustible material in a TCFZ when the plant is in Mode 1, 2, or 3.

Contrary to the above, the licensee failed to follow OP-AA-201-009, Attachment 5, Step 1, by not having an authorized TCP for unattended Class A combustible items (a BRC containing a plastic storage container, a cloth curtain, plastic wheels, and other miscellaneous plastic items) that were found by the inspectors within the TCFZ near the containment equipment hatch in the Fuel Building 737' Elevation on November 30, 2010. Because of the very low safety significance, this violation is being treated as a Non-Cited Violation consistent with Section 2.3.2 of the NRC Enforcement Policy (**NCV 05000461/2010005-01, Failure to Control Transient Combustible Materials in Accordance with Fire Protection Program**). The licensee entered this violation into its CAP as Action Request (AR) 1146480.

1R06 Flooding Protection Measures (71111.06)

.1 Underground Vaults

a. Inspection Scope

During this inspection period, the licensee opened and dewatered cable vaults that contained risk significant safety-related and non-safety related power and control cables; evaluated the material condition of the vaults, cables, and cable supports; and monitored a plant modification (sump pumps and level alarm switches) that maintain the vaults dewatered. The inspectors verified that cables were not significantly degraded due to prolonged submergence in water, that cable splices were intact, and that appropriate cable support structures were in place.

This inspection constituted one annual underground cable vaults inspection sample as defined in IP 71111.06.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Annual Operating Test Results (71111.11B)

a. Inspection Scope

The inspector reviewed the overall pass/fail results of the individual Job Performance Measure operating tests, and the simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from October 27, 2010, through December 7, 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 to this report.

This inspection constituted one biennial licensed operator requalification inspection sample as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Licensed Operator Regualification Program (71111.11Q)

a. Inspection Scope

The inspectors observed licensed operators during simulator training on October 27, 2010. The inspectors assessed the operators' response to the simulated

events focusing on alarm response, command and control of crew activities, communication practices, procedural adherence, and implementation of Emergency Plan requirements. The inspectors also observed the post-training critique to assess the ability of licensee evaluators and operating crews to self identify performance deficiencies. The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

The inspection constituted one quarterly licensed operator requalification inspection sample as defined in IP 71111.11.

b. Findings

No findings were identified.

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 maintenance and emergent work activities affecting the risk significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Planned maintenance during the week of October 18th on the High Pressure Core Spray System (single train risk-significant system); and
- Planned maintenance during the week of November 23rd on the Reserve Auxiliary Transformer.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each of the above activities, the inspectors reviewed the scope of maintenance work in the plant's daily schedule, reviewed Control Room logs, verified that plant risk assessments were completed as required by 10 CFR 50.65(a)(4) prior to commencing maintenance activities, discussed the results of the assessment with the licensee's Probabilistic Risk Analyst and/or Shift Technical Advisor, and verified that plant conditions were consistent with the risk assessment assumptions. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify that risk analysis assumptions were valid, that redundant safety-related plant equipment necessary to minimize risk was available for use, and that applicable requirements were met.

In addition, the inspectors verified that maintenance risk related problems were entered into the licensee's CAP with the appropriate significance characterization. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted two maintenance risk assessment inspection samples as defined in IP 71111.13.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- EC 380813, "Evaluation of Preconditioning of TS and ORM [Operations Requirements Manual] Pressure Switches," and
- AR 01126552, "Step Change in Stroke Time for 1SA029."

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors verified that the conditions did not render the associated equipment inoperable or result in an unrecognized increase in plant risk. When applicable, the inspectors verified that the licensee appropriately applied TS limitations, appropriately returned the affected equipment to an operable status, and reviewed the licensee's evaluation of the issue with respect to the regulatory reporting requirements. 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 evaluation.

In addition, the inspectors verified that problems related to the operability of safety-related plant equipment were entered into the licensee's CAP with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted two operability evaluation inspection samples as defined in IP 71111.15.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (PMT) (71111.19)

a. Inspection Scope

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

- WO 01355471, "9170.01B20 Operations MCR HVAC Chill Water Pump B Operability"; and
- Multiple Work Orders, Residual Heat Removal Train 'A' Valve PMT's.

The inspectors reviewed the scope of the work performed and evaluated the adequacy of the specified post-maintenance testing. The inspectors verified that the post-maintenance testing was performed in accordance with approved procedures; that the procedures contained clear acceptance criteria, which demonstrated operational readiness and that the acceptance criteria was met; that appropriate test instrumentation was used; that the equipment was returned to its operational status following testing; and that the test documentation was properly evaluated.

In addition, the inspectors reviewed CAP documents associated with post-maintenance testing to verify that identified problems were entered into the licensee's CAP with the appropriate characterization. Selected action requests were reviewed to verify that the corrective actions were appropriate and implemented as scheduled.

This inspection constituted two post-maintenance testing inspection samples as defined in IP 71111.19.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- CPS 9053.04, "Residual Heat Removal A/B/C Valve Operability Checks"; (IST) and
- CPS 9080.03, "Diesel Generator 1C Operability – Manual and Quick Start Operability."

The inspectors observed selected portions of the test activity to verify that the testing was accomplished in accordance with plant procedures. The inspectors reviewed the test methodology and documentation to verify that equipment performance was consistent with safety analysis and design basis assumptions, and that testing acceptance criteria were satisfied.

In addition, the inspectors verified that surveillance testing problems were entered into the licensee's CAP with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted one in-service test and one routine surveillance test for a total of two surveillance testing inspection samples as defined in IP 71111.22.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Review of Submitted Quarterly Data

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the Third Quarter Performance Indicators for any obvious inconsistencies prior to its public release in accordance with IMC 0608, "Performance Indicator Program."

This inspection was not considered to be an inspection sample as defined in IP 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index (MSPI) - Cooling Water Systems

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI - Cooling Water Systems Performance Indicator. To determine the accuracy of the performance indicator data reported, performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, LERs, and maintenance and test data from July 2009 through June 2010, to validate the accuracy of the performance indicator data reported. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's CAP database to determine if any problems had been identified with the performance indicator data collected or transmitted for this performance indicator.

This inspection constituted one MSPI - Cooling Water System Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate

attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Some minor issues were entered into the licensee's CAP as a result of the inspectors' observations; however, they are not discussed in this report.

This inspection was not considered to be an inspection sample as defined in IP 71152.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors reviewed repetitive or closely related issues documented in the licensee's CAP to look for trends not previously identified. The inspectors also reviewed action requests regarding licensee-identified potential trends to verify that corrective actions were effective in addressing the trends and implemented in a timely manner commensurate with the significance.

This inspection constituted one semi-annual trend review inspection sample as defined in IP 71152.

b. Assessment and Observations

(1) Overall Effectiveness of Trending Program

The inspectors determined that the licensee's trending program was generally effective at identifying, monitoring, and correcting adverse performance trends. The inspectors reviewed several common cause and operational and technical decision making evaluations performed by the licensee to evaluate potential adverse performance and equipment trends. In general, these evaluations were performed well and identified appropriate corrective actions to address adverse trends that were identified. The inspectors did not identify any adverse trends that were not already identified by the licensee and entered into its CAP.

(2) Adverse Trends in Human Performance and Past Operability/Reportability Trends

The inspectors noted that the licensee continued to identify human performance related issues and trends. During the last semi-annual trend review documented in NRC Inspection Report 05000461/2010003, the inspectors discussed the licensee's evaluation of human performance issues associated with the Cycle 12 refueling outage and the corrective actions implemented to improve human performance at the station. There continued to be examples where the licensee self-identified concerns in this area.

In August 2010, issues were identified by the licensee involving adverse human performance trends in the areas of Engineering, Industrial Safety, Maintenance, and Security. A review of CAP trend reports noted a declining trend in human performance and was documented in AR 1105080. The licensee highlighted an unfavorable trend in error precursors, latent organizational weaknesses, and flawed defenses related to the latest trends.

Inspectors have observed what appears to be a continuing trend regarding past operability and reportability concerns. In NRC Inspection Report 05000461/2009005, inspectors discussed an adverse trend in evaluating past operability/reportability when degraded or nonconforming conditions were found. Problems in this area have also been observed by the licensee's Nuclear Oversight department. Inspection Procedure (IP) 92723, "Follow Up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period," is planned to follow up in this area.

There are current corrective actions being implemented and specific issues have been adequately addressed individually to date (the majority of these are at a very low significance threshold); therefore, the inspectors plan to continue to monitor the effectiveness of the licensee's corrective actions.

40A5 Other Activities

.1 Failure to Perform Preventive Maintenance of Division 1 Self Test System (STS) Power Supply

Introduction

A finding of very low safety significance (Green) was self-revealed by multiple spurious valve actuations due, in part, to the licensee's failure to perform appropriate preventive maintenance to replace a degraded Division 1 STS power supply. On August 24, 2010, the Reactor Water Cleanup (RT) System Return Line Outboard Primary Containment Isolation valve unexpectedly closed, isolating the RT system. Several other unintended valve repositioning events occurred from August 25 through August 26, 2010. During this time the Reactor Core Isolation Cooling (RCIC) Minimum Flow valve cycled open and closed on four separate occasions and the 'A' Train Low Pressure Coolant Injection (LPCI) valve opened automatically without a valid signal present.

Discussion

The inspectors initiated Unresolved Item (URI) 05000461/2010004-01 during the third quarter of 2010 pending further evaluation of a potential design control issue involving the apparent interaction between non-safety related and safety-related portions of the Nuclear System Protection System (NSPS) causing spurious component actuations. This latent design issue was only revealed by the degrading Division 1 STS power supply and resultant spurious valve actuations. The licensee subsequently submitted Licensee Event Report (LER) 2010-003-00, "Unexpected Component Actuations Due to Self Test System Design Deficiencies," to report the component actuations. The URI and LER will remain open pending additional review by the inspectors and the resolution of open questions. As an interim corrective action, the licensee has since installed a temporary plant modification of dual 5 Volt power supplies for all four divisions of the STS.

The non-safety related STS is an automatic, on-line self test system that injects short duration pulses into the NSPS logic to verify proper response of the logic to various input combinations. Test pulses are purposely of short duration and limited repetition rate so that they do not cause mechanical movement downstream in the circuit. Each of the four divisional NSPS cabinets in the Control Room contains a microprocessor based self test controller that compares input test signals with expected output results.

Discrepancies are annunciated. These sets of test signals comprehensively test all essential circuits and wiring within and between the NSPS cabinets, such that STS is able to determine the exact location of any failures in the safety-related hardware. The STS was designed to prevent propagation of any failure to the safety-related functions of the NSPS. According to Section 7.2.1.1.4.8 of the UFSAR, STS is classified as "safety associated." The UFSAR also states "that failures in the STS will not propagate to the safety equipment."

The licensee's Equipment Apparent Cause Evaluation (EACE #1105478) for the August 2010 unexpected valve operations concluded that STS has two design deficiencies which do not allow the STS to meet its design function, which is that no fault in the STS will degrade the operation of nuclear safety-related equipment. The licensee described these two design deficiencies as: (1) no low voltage protection for the STS 5 Volt DC power supply to prevent a failure mode that results in the generation of electronic noise, and (2) improper coordination timing between the STS coupling capacitor and pulse stretcher circuits on the load driver cards which allowed the electronic noise to cause unwanted valve operations. The inspectors thoroughly examined the licensee's apparent cause evaluation and concluded that the licensee had not neglected any significant issues. In addition, the corrective actions taken by the licensee in response to the documented causes also appeared to be appropriate. The licensee concluded that the cause of the valve repositioning events was due to the combination of low power supply voltage and lack of coordination between the coupling capacitor and pulse stretcher portions of the circuit which allowed spurious signals to pass through to safety-related components.

In order to prevent degraded voltage conditions, the STS power supplies are periodically replaced in accordance with the station's Preventive Maintenance (PM) schedule every ten years. The licensee's corporate preventive maintenance template stated that the power supplies should be replaced every 7.5 years. The STS power supplies were classified as critical components and per Operational Requirements Manual (ORM) 2.2.14 the STS shall be operable. The installed Division 1 STS power supply, recently augmented by a plant modification, was in service for over 12 years, since May 1, 1998. The power supply replacement maintenance was deferred on two separate occasions, once from the licensee's refueling outage in 2008 and again in 2010. The maintenance was deferred in 2008 based upon observed power supply performance. For the refueling outage of 2010 the maintenance was again deferred due to a determination by the Plant Operations Review Committee that deferral of the maintenance was not a risk to nuclear safety. Since the failures that revealed how STS could affect the safety-related NSPS had not yet occurred, this conclusion was based on the licensee's belief that STS met its design and would not affect safety-related equipment. That decision overruled a procedurally driven engineering review which determined there was not sufficient technical justification for deferral of the PM. At the time of each maintenance deferral the licensee was aware of industry operating experience which has shown that when power supplies are in service beyond 12 years their performance will be unpredictable and unreliable.

The second maintenance deferral was influenced by the unavailability of replacement power supplies. A late identification of the materials required to perform the PM occurred due to the licensee's inadequate tracking of work activities. After the Division 1 PM was deferred in 2008, the replacement power supply was issued to a similar PM for Division 2. At that time, the Division 1 work package was maintained in a "ready to

work” status despite the fact that its materials were reallocated and no longer available. Subsequently, the licensee learned on December 3, 2009, that they would not be able to obtain the replacement power supply in time to support the scheduled maintenance window which had been deferred to be performed in the 2010 refueling outage. However, on February 2, 2010, at that time still during the refueling outage, AR 1024769 was written to document the fact that a refurbished STS power supply had arrived on site on January 30, 2010. The AR also explained that there was no approved procedure which allowed replacement of the power supply online and it was again recommended to perform the power supply replacement during the refueling outage. However, as noted in the previous paragraph, the replacement was deferred.

Analysis

The inspectors determined that the licensee’s failure to perform preventive maintenance on the Division 1 STS power supply was a performance deficiency warranting a significance evaluation. The inspectors reviewed the examples of minor issues in IMC 0612, “Power Reactor Inspection Reports,” Appendix E, “Examples of Minor Issues,” and did not identify a sufficiently similar example; therefore, consistent with the guidance in IMC 0612, Appendix B, “Issue Screening,” the inspectors continued on to address the minor screening questions. The inspectors determined that the licensee’s failure to perform preventive maintenance on critical components such as the Division 1 STS 5V power supply, if left uncorrected, would potentially lead to a more significant safety concern. Specifically, the failure to properly maintain critical components or safety associated structures, systems, and components (SSCs) required to be operable by the ORM could reasonably impact the ability of an SSC to fulfill a safety-related function. Therefore, the inspectors concluded that this finding was of more than minor safety significance. The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609, Attachment 0609.04, “Phase 1 – Initial Screening and Characterization of Findings.” Based upon answering “no” to each of the Phase 1 screening questions listed in the Containment Barrier column of Table 4a in Attachment 0609.04, this finding was of very low safety significance (Green).

Cross-Cutting Aspects

The inspectors concluded that this finding affected the cross-cutting area of human performance. Specifically, in the area of resources, the licensee did not adequately maintain long-term plant safety by the maintenance of design margins, minimizing of preventative maintenance deferrals, and ensuring maintenance and engineering backlogs which are low enough to support safety. (IMC 0310 H.2(a))

Enforcement

No violation of regulatory requirements was identified. This issue is considered to be a finding (**FIN 05000461/2010005-02**). The licensee entered this finding into its CAP as AR 01105478.

4OA6 Management Meetings

.1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. M. Kanavos and other members of the licensee's staff at the conclusion of the inspection on January 13, 2011. The licensee acknowledged the findings presented. Proprietary information was not examined during this inspection.

.2 Interim Exit Meetings

Interim exit meetings were conducted for:

The results of the inspector's review of the Licensed Operator Requalification Training Program Annual Operating Test were discussed with Mr. R. Bedford via telephone on December 7, 2010. The inspector confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

K. Baker, Design Engineering Senior Manager
R. Bedford, Operations Training
R. Campbell, RP Technical Specialist
T. Chalmers, Operations Director
J. Cunningham, Security Manager
A. Darelus, EP Manager
J. Domitrovich, Work Management Director
C. Dunn, Shift Operations Superintendent
S. Fatora, Maintenance Director
R. Frantz, Regulatory Assurance
S. Gackstetter, Training Director
W. Hafiz, Design Engineering
G. Hall, Performance Improvement Program Manager
M. Heger, Mechanical/Structural Design Engineering Manager
N. Hightower, Radiological Engineering Manager
M. Kanavos, Plant Manager
D. Kemper, Regulatory Affairs Manager
F. Kearney, Site Vice President
D. Kemper, Regulatory Assurance Manager
S. Lakebrink, Mechanical Design Engineering
K. Leffel, Operations Support Manager
S. O'Riley, EP Coordinator
J. Peterson, Regulatory Assurance
F. Pournia, Engineering Director
J. Rappeport, Chemistry Manager
S. Soliman, Senior Chemist
J. Stovall, Radiation Protection Manager
J. Ufert, Fire Marshall
C. VanDenburgh, Nuclear Oversight Manager

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

- | | | |
|---------------------|-----|--|
| 05000461/2010005-01 | NCV | Failure to Control Transient Combustible Materials in Accordance with Fire Protection Program. (Section 1R05.1.b.(1)) |
| 05000461/2010005-02 | FIN | Failure to Perform Preventative Maintenance of Division 1 Self Test System (STS) Power Supply Results in Spurious Repositioning of Safety-Related Valves. (Section 4OA5.1) |

Closed

- | | | |
|---------------------|-----|--|
| 05000461/2010005-01 | NCV | Failure to Control Transient Combustible Materials in Accordance with Fire Protection Program. (Section 1R05.1.b.(1)) |
| 05000461/2010005-02 | FIN | Failure to Perform Preventative Maintenance of Division 1 Self Test System (STS) Power Supply Results in Spurious Repositioning of Safety-Related Valves. (Section 4OA5.1) |

Discussed

- | | | |
|----------------------|-----|---|
| 05000461/2010004-01 | URI | Apparent Interaction Between Non-Safety Related and Safety-Related Portions of the NSPS Causing Spurious Component Actuations. (Section 4OA5.1) |
| 05000461/2010-003-00 | LER | Unexpected Component Actuations Due to Self Test System Design Deficiencies. (Section 4OA5.1) |

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 inspector 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 Protection (71111.01)

- CPS 1860.01, "Cold Weather Operation," Revision 7d
- CPS 1860.01C001, "Operations Department Cold Weather Preparations Checklist," Revision 6a
- CPS 1860.01C003, "Cold Weather Heater and Heat Trace Operability Checklist," Revision 1
- CPS 1860.01C004, "Chemistry Department Cold Weather Preparations Checklist," Revision 0
- CPS 1860.01E001, "Cold Weather Heat Tracing System Electrical Lineup," Revision 0a
- CPS 3510.01, "Heat Tracing System (HT)," Revision 007D
- WC-AA-107, "Seasonal Readiness," Revision 9
- NRC Information Notice, "96-36: Degradation of Cooling Water Systems Due to Icing," June 12, 1996
- NRC Information Notice, "98-02: Nuclear Power Plant Cold Weather Problems and Protective Measures," January 21, 1998
- AR 01124634, "CW Pump A Not Removed From Service"
- AR 01126956, "Screen House Heat Trace 1HT03J Circuit C1-9 Indicates 000"
- AR 01126962, "Screen House Heat Trace 1HT03J Circuit C1-12 Over Temp"
- AR 00866452, "1VT04F: VT Shutdown Due to High DP on the Intake Filters"
- AR 00872957, "Design Deficiency for the 1TE-HT171 Heat Trace Element"
- AR 00975562, "Cold Weather Preparations for Raw Water Treatment"
- AR 01011305, "1SH05AL, FP Pump B Room Heater Inoperable"
- AR 01011439, "1VD04A: Received 5050-4A, High/Low Temp DG Room 1A"
- AR 01012960, "Received Annunciator 5052-5A, High/Low temp DG Day Tank Room"
- AR 01013183, "Air Handling Unit Cooling Coil Appears to Have Ruptured"
- AR 01013488, "VA Ventilation Supply Filters Clogging Due to Heavy Snow"
- AR 01029900, "VA Supply Fan Tripped Due To Low Flow, Ice on Supply Filter"
- AR 01011665, "Low N2 Pressure for ERAT Transformer"
- AR 01029901, "High D/P on 0VW05F"
- AR 01091198, "AC/Heater Unit in CW Building Tripped"
- AR 01091250, "MWPH Heater 0SH01AJ Will Not Turn On"
- AR 01091251, "MWPH Heater 0SH01AM Will Not Turn On"
- AR 01091252, "MWPH Heater 0SH01AN Will Not Turn On"
- AR 01127818, "Insulation Damaged On Outdoor Piping"
- AR 01129625, "Contingent Work Orders Required for Frazil Ice at the Screen House"
- AR 01134461, "NOS Id'd Winter Readiness Issues at the SPFH"
- AR 01140122, "1860.01C001 Requires Documented Evaluation for Winter"
- AR 01140130, "Winter Readiness"
- AR 01141821, "RWT House Cold Weather and Ventilation Concerns"

1R04 Equipment Alignment

- CPS 3215.01E001, "Off Gas System Electrical Lineup," Revision 10e
- CPS 3215.01V001, "Off Gas System Valve Lineup," Revision 16f
- CPS 3215.01V002, "Off Gas Instrument Valve Lineup," Revision 13
- M05-1084, "P&ID Off Gas (OG)," Sheet 001, Revision AF
- M05-1084, "P&ID Off Gas (OG)," Sheet 002, Revision AA
- M05-1084, "P&ID Off Gas (OG)," Sheet 003, Revision Y
- M05-1084, "P&ID Off Gas (OG)," Sheet 004, Revision O
- TCCP-EC 380630, "Provide Temporary Air Supply for 1N66F016A to Support Maintenance of Valve I/P 1N66K001A," Revision 0
- AR 01123065, "1N66N012A: Failed Surveillance 9032.18"
- AR 01072790, "OG Refrigeration Compressor C Would Not Shut Off at Correct Temperature"
- AR 01065182, "1N66N012A On/Off Power Light De-Energized"
- AR 01026744, "1N66N012A H2 Analyzer A Hi Vacuum Switch Problem"
- AR 01130988, "Housekeeping in H2 Analyzer Panels A and B"
- CPS 3319.01, "Standby Gas Treatment (VG)," Revision 16
- CPS 3319.01V001, "Standby Gas Treatment Valve Lineup," Revision 8
- CPS 3319.01V002, "Standby Gas Treatment Instrumentation Valve Lineup," Revision 5a
- CPS 3319.01E001, "Standby Gas Treatment Electrical Lineup," Revision 10c
- M05-1105, "P&ID Standby Gas Treatment System (VG)," Sheet 001, Revision S
- M05-1105, "P&ID Standby Gas Treatment System (VG)," Sheet 002, Revision N
- M05-1105, "P&ID Standby Gas Treatment System (VG)," Sheet 003, Revision F
- M05-1105, "P&ID Hydrogen Recombiner Room Cooling System (VG)," Sheet 004, Revision E
- AR 01118921, "1VG04YA: Dual Indication"
- AR 01118145, "0SX009 & 8: VG Train Deluge Valve Leakage for PM WO 1367903"
- AR 01114500, "Unexpected Annunciator 5042-5D, High Differential Pressure Fuel Building"
- AR 01107936, "1VG02YA Hydramotor Redundant Dump Valve Leaking"
- AR 01138144, "1PDTVG151 Calibration As-Found Out of Spec, Cat. A Instrument"
- AR 01138457, "Water Found in Instrument Line"
- CPS 3211.01, "Shutdown Service Water (SX)," Revision 25b
- CPS 3211.01E001, "Shutdown Service Water Electrical Lineup," Revision 17d
- CPS 3211.01, "Shutdown Service Water Valve Lineup," Revision 26c
- CPS 3211.01, "Shutdown Service Water Instrument Valve Lineup," Revision 9
- M05-1052, "P&ID Shutdown Service Water (SX)," Sheet 003, Revision AJ
- AR 01098622, "1TSVH006: SX Pump Room 1C Temperature Alarm"
- AR 01050171, "Division 3 SX Pump (1SX01PC) Packing Leak"
- AR 01049920, "Declining Performance Trend for Division 3 SX Pump – 1SX01PC"
- AR 01047812, "Backflow Through 1SX001C Noted During SX Pump C Surveillance"
- AR 01033382, "1SX027C Has Small Packing Leak"

1R05 Fire Protection

- CPS UFSAR, Appendix E, "FP Evaluation Report – CPS Unit 1," Revision 11
- OP-AA-201-009, "Control of Transient Combustible Material," Revision 8
- CPS 1893.04M310, "719' Control: HVAC Equipment Area Prefire Plan," Revision 6a
- CPS 1893.04M300, "702' Control: Basement Prefire Plan," Revision 7

- CPS 1893.04M302, "702-847' Control: East Stairwell and Elevator Prefire Plan," Revision 6
- CPS 1893.04M330, "751' Control: HVAC Mezzanine Prefire Plan," Revision 6
- CPS 1893.04M353, "781' Control: Division 3 Switchgear and Battery Room Prefire Plan," Revision 6
- CPS 1893.04M370, "825' Control: Control Room HVAC Prefire Plan," Revision 7
- CPS 1893.04M610, "720' Radwaste: Intermediate Floor (South) Prefire Plan," Revision 6
- CPS 1893.04M611, "720-725' Radwaste: Intermediate Floor (North) Prefire Plan," Revision 4
- CPS 1893.04M621, "737' Radwaste: Floor Drain & Chemical Waste Area Prefire Plan," Revision 4
- AR 01142149, "Compliance with USAR Section 11.2.1.6.F"
- CPS 1893.04M102, "707' – 781' Auxiliary: RHR 'A' Pump and Heat Exchanger Room Prefire Plan," Revision 5
- CPS 1893.04M104, "707' Auxiliary: RHR 'B' Pump and Heat Exchanger Room Prefire Plan," Revision 5
- CPS 1893.04M105, "707' Auxiliary: RHR 'C' Pump Room Prefire Plan," Revision 5
- AR 01115596, "Barrels Stored May Have Chemicals – Need Removed"
- AR 01025172, "Housekeeping Issues in ECCS Areas"
- Clinton Power Station Updated Final Safety Analysis Report, Appendix E, "Fire Protection Evaluation Report – Clinton Power Station Unit 1," Revision 11
- Clinton Power Station Updated Final Safety Analysis Report, Appendix F, "Fire Protection Safe Shutdown Analysis – Clinton Power Station Unit 1," Revision 11
- OP-AA-201-009, "Control of Transient Combustible Material," Revision 11
- AR 01146480, "IEMA ID'D: BRC Inadvertently Moved Within TCFZ"
- Quick Human Performance Investigation AR 011046480, "Security BRC Moved Into a TCFZ Area"

1R06 Flooding

- NRC Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients," Revision 0
- NRC Information Notice 2002-12, "Submerged Safety-Related Electrical Cables," March 21, 2002
- NRC Information Notice 2010-26, "Submerged Electrical Cables," December 2, 2010
- ER-AA-3003, "Cable Condition Monitoring Program," Revision 0
- AR 01130986, "OSHA Underground Cable Vaults Need Draining"

1R11 Licensed Operator Requalification Program

- TQ-AA-150, "Operator Training Program," Revision 4
- TQ-AA-224, "Exelon Nuclear Training – Implementation Phase," Revision 4
- TQ-AA-306, "Simulator Management," Revision 1
- OP-AA-102-104, "Pertinent Information Program," Revision 1
- Results of Annual Operation Test, December 12, 2010

1R13 Maintenance Risk Assessments and Emergent Work Control

- WC-AA-101, "On-Line Work Control Process," Revision 17
- WC-AA-104, "Integrated Risk Management," Revision 17
- ER-AA-600, "Risk Management," Revision 5
- ER-AA-600-1012, "Risk Management Documentation," Revision 8
- ER-AA-600-1042, "On-Line Risk Management," Revision 7
- OP-AA-108-117, "Protected Equipment Program," Revision 1
- Prompt Investigation 01128439, "Plant Condition Orange Extended 5 Hours Due To Delays"
- AR 01020404, "Restoration of North Bus / 345 kV Ring Bus Delayed 3 Hours"
- AR 01128276, "Valve 1SX040B Found With Stem/Disk Separation"
- AR 01128439, "Plant Condition Orange Extended 5 Hours Due To Delays"
- AR 01137890, "Lessons Learned from Joint Ameren Training"
- AR 01143620, "No On-Shift Crew JITT Prior to Planned RAT Outage"
- AR 01144184, "Unexpected Annunciator 5006-3L"

1R15 Operability Evaluation

- ER-AA-321, "Administrative Requirements for IST," Revision 10
- OP-AA-108-106, "Equipment Return To Service," Revision 4
- EC 380813, "Evaluation of Preconditioning of TS and ORM Pressure Switches," Revision 0
- EC 373619, "24-Month Cycle Evaluation of Instrument Drift," 2nd Update (post C1R11) using data from 2007-2008
- IP-C-0069, "Setpoint Calculation for Turbine Control Valve Fast Closure Scram, 1C71-N005A, B, C, & D," Revision 1
- QDC-98449, "Failure Analysis of Barksdale TC9622-3-B-Z1, Range 250 to 30,000 psi, Manufacturing Date 12/01/2005"
- CPS 9061.03C007, "Service Air Isolation Valve Operability Checklist," Revision 34d
- CPS 9431.06, "RPS Turbine Control Valve Fast Closure C71-N005A (B, C, D) Channel Calibration," Revision 35d
- Operability Evaluation #896120-02, "1E12F028B, Containment Spray Shutoff Valve"
- AR 00658918, "Instrument Drift Trending for Group 17 Exceeds Expectation"
- AR 00870109, "Barksdale Pressure Switches – Drift Greater Than Expected"
- AR 01085294, "TIA 2009-006, Monticello Preconditioning of Pressure Switches"
- AR 01106413, "Enhancement for channel Calibration of TCV Pressure Switches"
- AR 01125491, "OPEX: EHC System Vibration May Affect Instrument Reliability"
- AR 01126552, "Step Change in Stroke Time for 1SA029"
- AR 01128391, "IST Valve Evaluation Form Errors For 1SA029"

1R19 Post-Maintenance Testing

- CPS 9170.01, "Control Room HVAC Chilled Water Pumps A, B Operability Test," Revision 29a
- CPS 9170.01D001, "VC Pump Operability Data Sheet"
- WO 01355471, "9170.01B20 Op MCR HVAC Chill Water Pump B Operability"
- AR 01126589, "1SX019B Hydramotor Leaking Oil, Damaged Wire"
- AR 01127292, "0VC10B Strokes Too Slow"
- CPS 9381.01, "MOV Thermal Overload Bypass Verification," Revision 37

- CPS 9381.01C002, "MOV Thermal Overload Bypass Post-Maintenance Verification Checklist," Revision 28
- CPS 9053.04, "Residual Heat Removal (RHR) A/B/C Valve Operability Checks," Revision 45a
- WO 01316034, "OP PMT Stroke/Time 1SX023A CPS 9069.02"
- WO 01019656, "OPS PMT Stroke and Time 1SX023A IAW CPS 9069.02"
- WO 00461205, "OPS PMT – CPS 9053.04, 1E12-F048A"
- WO 01268398, "OP PMT – CPS 9053.04, 1E12-F027A"
- WO 01234573, "OP PMT – Perform CPS 9052.01 for 1E12F024A"
- WO 01234571, "OPS PMT, Stroke Valve 1E12-F003A per 9053.04C001"
- WO 01234572, "OPS PMT, Stroke Valve 1E12-F047A per 9053.04C001"
- WO 01235048, "OP PMT – Stroke 1E12-F004A IAW CPS 9053.04C001"
- WO 01234570, "OP 1E12-F014A: PMT – 9069.01"

1R22 Surveillance Testing

- CPS 3506.01D003, "Diesel Generator 1C Operating Logs," Revision 3
- CPS 9053.04, "RHR A/B/C Valve Operability Checks," Revision 45a
- CPS 9053.04C001, "RHR Loop A Valve Operability," Revision 2
- CPS 9053.04D001, "RHR Loop A Valve Operability Data Sheet," Revision 44
- CPS 9080.03, "Diesel Generator 1C Operability – Manual and Quick Start Operability," Revision 31c
- CPS 9080.03D001, "Diesel Generator 1C Operability – Manual and Quick Start Data Sheet," Revision 22a
- CPS 9080.12, "Diesel Generator Fuel Oil Transfer Pump Operability," Revision 34
- CPS 9061.03, "Containment/Drywell Isolation Valve Three-Month Operability," Revision 39
- CPS 9061.03C007, "Week 7 – SA Isolation Valve Operability Checklist," Revision 34d
- CPS 9061.03D007, "Week 7 – SA Isolation Valve Operability Data Sheet," Revision 33d
- Work Order 1359588, "Perform RHR A Valve Operability Per 9053.04C001/D001"
- Work Order 1378483, "Step Change in Stroke Time for 1SA029"
- AR 01132149, "9053.04 Not Performed As Scheduled"
- AR 01141191, "Division 3 DG Fuel Oil Transfer Pump Operability Test Unsuccessful"

40A1 Performance Indicator Verification

- Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6
- CL-MSPI-01, "Clinton MSPI Basis Document," Revision 5
- MSPI Derivation Report, Period June 2010, for Cooling Water Systems, Generation Date July 19, 2010
- LS-AA-2001; Collecting and Reporting of NRC Performance Indicator Data; Revision 13

4OA2 Identification and Resolution of Problems (71152)

- Common Cause Evaluation (AR 01100645), "Human Performance Events Contributed to Several Department Clock Resets," August 1, 2010
- Common Cause Evaluation (AR 01099410), "Security: Evaluate for CCA for Declining Human Performance," September 3, 2010
- OTDM 1049920-03, "Declining Performance Trend on Division 3 SX Pump (1SX01PC) Discharge Pressure," June 3, 2010
- AR 01085854, "INPO AFI CCA 858043 Effectiveness Reviews Require Additional"
- AR 01099312, "Engineering Human Performance Fundamentals Trend ID'd During Monthly Review"
- AR 01099410, "Security: Evaluate for CCA on Security Declining Human Performance"
- AR 01100645, "CPS Challenge to Human Performance Behaviors"
- AR 01105080, "Human Performance CAP Trend Shows Declining Trend"
- AR 01108556, "1DG01KA: Division 1 DG Start Time Near the Max Allowable"
- AR 01134279, "1E12F028B Containment Spray Shutoff Valve Leakage During RHR Run"
- AR 01134295, "Entered Spill Off-Normal 4979.06 Due To Valve Leakage"
- AR 01141088, "Maintenance Rule (a)(1) Determinations"

LIST OF ACRONYMS USED

| | |
|-------|--|
| ADAMS | Agencywide Document Access Management System |
| AR | Action Request |
| BRC | Bullet Resistant Container |
| BTP | Branch Technical Position |
| CAP | Corrective Action Program |
| EACE | Equipment Apparent Cause Evaluation |
| IMC | Inspection Manual Chapter |
| IP | Inspection Procedure |
| LER | Licensee Event Report |
| LPCI | Low Pressure Coolant Injection |
| MSPI | Mitigating Systems Performance Indicator |
| NCV | Non-Cited Violation |
| NRC | U.S. Nuclear Regulatory Commission |
| NSPS | Nuclear System Protection System |
| ORM | Operations Requirements Manual |
| PARS | Publicly Available Records System |
| PM | Planned or Preventative Maintenance |
| PORC | Plant Operations Review Committee |
| RCIC | Reactor Core Isolation Cooling |
| RT | Reactor Water Cleanup |
| SDP | Significance Determination Process |
| SSC | Structure, System, or Component |
| STS | Self Test System |
| TCFZ | Transient Combustible Free Zone |
| TCP | Transient Combustible Permit |
| TS | Technical Specification |
| UFSAR | Updated Final Safety Analysis Report |
| URI | Unresolved Item |
| V | Volts |

M. Pacilio

-2-

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Sincerely,

/RA/

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

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