



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

October 28, 2010

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  
05000461/2010-004

Dear Mr. Pacilio:

On September 30, 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 October 7, 2010, with Mr. F. Kearney, 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, no findings of significance were identified.

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 05000461/2010-004;  
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000461/2010-004

Licensee: Exelon Generation Company, LLC

Facility: Clinton Power Station

Location: Clinton, IL

Dates: July 1, through September 30, 2010

Inspectors: B. Kemker, Senior Resident Inspector  
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Branch 1  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000461/2010-004, 07/01/10 – 09/30/10; Clinton Power Station, Unit 1; Integrated Inspection Report.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. 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**

No findings of significance were identified.

**B. Licensee-Identified Violations**

No findings of significance were identified.

## REPORT DETAILS

### Summary of Plant Status

Unit 1 was operated at or near full power during the inspection period with the following exceptions.

On August 13, 2010, the licensee reduced power to about 95 percent due to condensate inlet temperature reaching 122 degrees Fahrenheit. The unit was returned to full power the following day after inlet temperature had decreased.

On August 30, 2010, the licensee reduced power to about 91.3 percent to insert control rods 16-25 and 44-45 and perform Hydraulic Control Unit (HCU) maintenance. The unit was returned to full power later the same day upon completion of testing.

On September 4, 2010, the licensee reduced power to about 80 percent to perform control rod sequence exchange, scram time testing, 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 to Cope with External Flooding

##### a. Inspection Scope

The inspectors reviewed flood protection barriers and procedures for coping with external flooding at the plant. The Clinton Power Station has limited susceptibility to external flooding as described in Section 3.4.1.1 of the Updated Final Safety Analysis Report (UFSAR) and Section 5.2 of the Individual Plant Examination for External Events Report. The inspectors reviewed Clinton Power Station (CPS) 4303.02, "Abnormal Lake Level," Revision 10, to assess the adequacy of the licensee response to external flooding conditions.

The inspectors conducted a walkdown of the Lake Screen House, including the shutdown service water pump rooms. The inspectors assessed the condition of water tight door seals; the sealing of equipment floor plugs, electrical conduits, holes or penetrations in floors and walls between the pump rooms; and the condition of room floor drains, sumps, and sump pumps.

In addition, the inspectors performed a walkdown of the Clinton Lake Dam with the cognizant engineer to inspect for any potential degraded conditions such as a build-up of debris at the spillways and ogee; a build-up of trees and shrubs on the downstream side of the dam that could possibly affect drainage; a build-up of sediment and debris on the rip-raps that could possibly cause deterioration of the retaining wall; and general material condition of signs, buoys, and lights. The inspectors also performed a general review and discussion of the Clinton Lake Dam Emergency Action Plan with the cognizant

engineer, including flood alert levels, associated actions, and emergency notification requirements.

This inspection constituted one external flooding readiness inspection sample as defined in Inspection Procedure (IP) 71111.01.

b. Findings

No findings of significance 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:

- Control Room Ventilation System Train 'A' during maintenance on Control Room Ventilation System Train 'B';
- Standby Liquid Control System; and
- Division 3 Battery and Direct Current (DC) Power Distribution – single train risk-significant system following battery charger restoration from maintenance.

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 of significance were identified.

.2 Semi-Annual Complete System Walkdown (71111.04S)

a. Inspection Scope

The inspectors performed a complete system alignment inspection of the Containment Combustible Gas Control System to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk

significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding work orders was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved.

This inspection constituted one complete system walkdown sample as defined in IP 71111.04.

b. Findings

No findings of significance 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-3c & CB-3g, Non-Safety Battery Rooms (West & East) – Elevation 781'0";
- Fire Zone F-1h, Valve Room - Elevation 712'0";
- Fire Zone M-2b, Division 2 Shutdown Service Water Pump Room – Elevation 699'0"; and
- Fire Zone T-1m, Turbine Deck - Elevation 800'0".

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

No findings of significance were identified.

.2 Fire Protection – Drill Observation (71111.05A)

a. Inspection Scope

During an announced drill on July 14, 2010, associated with the Control Building 781'0" Elevation Insulation Shop Area, the inspectors assessed the timeliness of the fire brigade in arriving at the scene, the firefighting equipment brought to the scene, the donning of fire protective clothing, the effectiveness of communications, and the exercise of command and control by the fire brigade leader. The inspectors also assessed the acceptance criteria for the drill objectives, the rigor and thoroughness of the post-drill critique, and verified that fire protection drill issues were being entered into the licensee's CAP with the appropriate characterization and significance.

This inspection constituted one annual fire protection drill inspection sample as defined in IP 71111.05AQ.

b. Findings

No findings of significance were identified.

1R06 Flooding Protection Measures (71111.06)

.1 Internal Flooding

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 UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. 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 following plant areas 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:

- Diesel Generator Rooms; and
- Turbine Building Main Condenser Pits.

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



b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q)

a. Inspection Scope

The inspectors observed licensed operators during simulator training on August 11, 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 of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated the licensee's handling of selected degraded performance issues involving the following risk-significant structures, systems, and components (SSCs):

- Motor Operated Valves;
- Turbine Building Heating and Ventilation System; and
- Circulating Water System.

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the SSC performance or condition problems in terms of:

- Appropriate work practices;
- Identifying and addressing common cause failures;
- Scoping of SSCs in accordance with 10 CFR 50.65(b);
- Characterizing SSC reliability issues;
- Tracking SSC unavailability;
- Trending key parameters (condition monitoring);
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification; and
- Appropriateness of performance criteria for SSC functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSC functions classified (a)(1).

In addition, the inspectors verified that problems associated with the effectiveness of plant maintenance 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.

The inspection constituted three maintenance effectiveness inspection samples as defined in IP 71111.12.

a. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for 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:

- Planned maintenance on August 10th and 11th on Instrument Air Containment Isolation Valve 11A012B;
- Emergent maintenance during the week of August 29th to address Division 1 Self Test System (STS) failures;
- Planned maintenance and testing during the week of September 13th on Residual Heat Removal System Trains 'B' and 'C';
- Emergent maintenance during the week of September 20th; on the Division 2 Diesel Generator and
- Planned Maintenance during the week of September 27th on the Division 1 Diesel Generator.

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 five maintenance risk assessment inspection samples as defined in IP 71111.13.

a. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- AR 01021972, "C1R12: Vacuum Breaker 1SX303B IST [Inservice Testing] Failed Closing Test";
- AR 01093674, "Actions Needed by OPS to Declare H2 System Operable";
- AR 01109546, "Division 3 Battery Room is 68F and is an OOS Round";
- AR 00950308, "Non-Safety O-Rings Installed in Safety-Related / EQ [Environmental Qualification] Valves"; and
- AR 01105478, "1G33F039 Spurious Actuation."

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 issues 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 evaluations.

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 five operability evaluation inspection samples as defined in IP 71111.15.

b. Findings

- (1) Apparent Interaction Between Non-Safety Related and Safety-Related Portions of the Nuclear System Protection System Causing Spurious Component Actuations

Introduction

The inspectors initiated an Unresolved Item (URI) pending further evaluation of a potential design control issue involving apparent interaction between non-safety related and safety-related portions of the Nuclear System Protection System (NSPS) causing spurious component actuations.

## Discussion

The licensee has recently experienced problems stemming from degrading power supplies in its NSPS STS. A reactor water cleanup (RT) system isolation occurred on August 24, 2010, and appears to have been caused by spurious valve actuations due to a degraded power supply on Division 1 STS. The STS is an automatic, on-line self-test system that pulses all the NSPS circuit cards to detect hardware failures. Each of the four divisional NSPS cabinets in the Control Room contains a microprocessor based self-test controller in whose memory are stored sets of input stimuli test patterns and expected output results. For each set of input patterns, the expected and actual outputs are compared. Any discrepancies are annunciated. These sets of test patterns 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 not influence the safety-related functions of the NSPS cards. According to Section 7.2.1.1.4.8 of the UFSAR, the STS is classified as "safety associated," and its equipment is designed to meet the applicable IEEE and Regulatory Guides which apply to that classification. It was designed to meet the separation requirements of Regulatory Guide 1.75 and interfaces are supposedly by means of high impedance isolation devices to ensure that failures in the STS will not propagate to the safety equipment. However, it appears that a faulted STS can possibly affect the output of the NSPS load driver cards. In other words, failures in a non-safety related portion of the NSPS are able to cause spurious actuations of safety-related components.

In March 2010, CPS had a drywell cooling containment isolation event (EN#45901). Like the event last March, the licensee initially thought that the spurious RT valve actuations were due to a bad NSPS load driver circuit card. The only spare card available was the exact same load driver card that had apparently failed in March 2010 and was refurbished by the vendor. However, neither the vendor's testing nor the licensee's on-site testing found anything wrong with that circuit card. The licensee replaced the load driver card suspected of causing the RT system isolation with the spare card. The licensee tested the removed card and again there was nothing found wrong with the card. The licensee then suspected that something else was the cause of the problem. The licensee subsequently found that the 5VDC power supply for the Division 1 STS had an output of about 3.1VDC and the ripple and noise were also excessive at about 1.4 Volts Alternating Current (VAC) (2,000% the acceptable maximum value). After some additional spurious valve movements (i.e., a reactor core isolation cooling (RCIC) system recirculation valve and a low pressure coolant injection system valve), the licensee powered down the Division 1 STS 5VDC power supply and installed a temporary modification to parallel a new 5VDC power supply to see if conditions improved. There have been no additional spurious valve actuations since then. The licensee then began monitoring the power supply voltages for all four NSPS divisions and found concerns with the 5VDC power supply for the Division 2 STS and it was then powered down. The licensee installed another temporary modification to parallel a new power supply to the Division 2 STS.

At the end of this inspection period, the licensee was continuing to investigate this problem to identify appropriate corrective actions, consulting with the vendor, monitoring the STS power supplies, procuring new power supplies, and making plans to replace power supplies during the next forced or refueling outage. The licensee is evaluating this issue under AR 01105478. It would appear that the March 2010 drywell cooling

containment isolation event was also related to this problem. The licensee wrote AR 01108387 to reevaluate the March 2010 event.

The inspectors discussed the apparent interaction between non-safety related and safety-related portions of the NSPS causing spurious component actuations with the licensee and questioned the adequacy of the design with respect to the applicable design requirements for separation. This issue is considered to be an URI pending additional review by the licensee and the inspectors (**URI 05000461/2010004-01, Apparent Interaction Between Non-Safety Related and Safety-Related Portions of the NSPS Causing Spurious Component Actuations**).

1R18 Plant Modifications (71111.18)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed the following temporary plant modifications:

- Engineering Change (EC) 380630, "Provide Temporary Air Supply For 1N66F016A To Support Maintenance Of Valve I/P 1N66K001A,"; and
- EC 381213, "Temporary 5VDC Power Supply to Div 1 Self Test in 1H13-P661 Bay B."

The inspectors reviewed the temporary modifications and the associated 10 CFR 50.59 screening/evaluations against applicable system design basis documents, including the UFSAR and the TS to verify whether applicable design basis requirements were satisfied. The inspectors reviewed the Control Room logs and interviewed engineering and operations department personnel to understand the impact that implementation of the temporary modifications had on operability and availability of the affected plant SSCs.

The inspectors also reviewed a sample of action requests pertaining to temporary modifications to verify that problems were entered into the licensee's CAP with the appropriate significance characterization and that corrective actions were appropriate.

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

a. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (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 01211045-01, "Replace Fire Pump 'A' Battery Charger Regulator Circuit Boards";
- WO 01279637-02, "PMT [Post-Maintenance Test] Fuel Pool Cooling Pump";
- WO 01011258-06, "Operations PMT 1SX185A"; and
- WO 01367024-02, "Stroke Combustible Gas Control System Compressor 1A Suction Valve 1HG009A".

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 four post-maintenance testing inspection samples as defined in IP 71111.19.

#### Findings

No findings of significance were identified.

#### 1R20 Outage Activities (71111.20)

##### .1 Refueling Outage Activities- Crane and Heavy Lift Inspection

##### a. Inspection Scope

(Closed) Unresolved Item 05000346/2009004-04 Reactor Pressure Vessel (RPV) Head Strongback, Dryer/Separator Strongback and RPV Head Lifting Lugs Did Not Demonstrate Single Failure Proof Requirements of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," Section 5.1.6

During the 2009 crane and heavy lift inspection, the inspectors identified an unresolved item (URI) concerning whether the design of the RPV head strongback, dryer/separator, strongback and RPV head lifting lugs was in conformance with the licensing and design basis for single failure proof requirements of NUREG-0612, Section 5.1.6. Specifically, these components did not meet design factors of safety versus yield and ultimate strengths consistent with the guidelines of NUREG-0612, Section 5.1.6. As a result, the inspectors identified several licensing basis excerpts that implied that the RPV head strongback, dryer/separator strongback and RPV head lifting lugs were in conformance with the single failure proof requirements of NUREG-0612, Section 5.1.6.

To resolve this concern, Region III inspectors generated a Task Interface Agreement (TIA) to obtain an official staff position from the Office of Nuclear Reactor Regulation (NRR) to determine the licensing basis requirements with respect to meeting single failure proof design criteria of NUREG-0612, Section 5.1.6 for the reactor pressure

vessel head strongback, the dryer/separator strongback, and the reactor pressure vessel head lifting lugs at the Clinton Power Station.

The NRR staff's position was documented in TIA 2010-004, "Final Response to Task Interface Agreement Single-Failure-Proof Design for Reactor Pressure Vessel Head Strongback, Dryer/Separator Strongback, and Reactor Pressure Vessel Head Lifting Lugs at Clinton Power Station," dated August 27, 2010, (ADAMS ML101890187).

The NRR staff reviewed applicable licensing basis information including licensee submittals and NRC safety evaluation reports, and concluded that licensee references to providing a safety factor of 10 for these components were either vague (too general in nature) or related to a future action that was superseded by subsequent correspondence. In addition, the related NRC safety evaluation report was not specific enough to conclude a commitment to the safety factors described in Section 5.1.6 of NUREG-0612. As a result, NRR concluded that the licensing basis of the special lifting devices is adequately described in the licensee's updated safety analysis report.

The NRR staff found that the existing licensing basis of the special lifting devices and associated interfacing lift points provides a level of safety reasonably consistent with a low probability of handling system failure. The special lifting devices and interfacing lift points were constructed to industry standards and designed with reasonably large design margins. In addition, the special lifting devices were subject to proof load tests. As documented in NUREG-1774, "A Survey of Crane Operating Experience at U.S. Nuclear Power Plants from 1968 through 2002," poor heavy loads program implementation and human performance errors caused most load drop events, and no load drop events resulted from structural failure of special lifting devices. Therefore, the NRR staff considers the existing licensing and design basis for the special lifting devices at CPS appropriate and acceptable.

Based on the review of the TIA 2010-004 response, the inspectors did not identify a performance deficiency or violation of NRC requirements, and this unresolved item is closed.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

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 9051.01, "HPCS [High Pressure Core Spray System] Pump and Water Leg Pump Operability Test" (IST, TI 2515/177 effort);
- CPS 9072.01, "Steam Bypass Valve Tests";
- CPS 2700.12, "Division 1 SX System Flow Balance Verification"; and
- CPS 9054.01C002, "RCIC High Pressure Operability Checks" (IST).

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, demonstrated 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 TSs, 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 inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers 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.

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.



Also, additional activities were performed during the review of CPS 9051.01, "HPCS [High Pressure Core Spray System] Pump and Water Leg Pump Operability Test" that were associated with TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." This activity is described in bullet .2 of this section.

This inspection constituted two in-service tests and two routine surveillance tests, for a total of four inspection samples as defined in IP 71111.22.

b. Findings

No findings of significance were identified.

.1 Surveillance Testing associated with Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems."

a. Inspection Scope

When reviewing CPS 9051.01, "HPCS [High Pressure Core Spray System] Pump and Water Leg Pump Operability Test" the inspectors verified that the procedure was acceptable for High Pressure Core Spray.

The inspectors reviewed the CPS procedure 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 (TI 2515/177, Section 04.03.a). Also, the inspectors reviewed the procedure 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).
- Procedure ensured the system did not contain voids that may jeopardize operability (TI 2515/177, Section 04.03.c.2).
- Procedure 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).
- Procedure 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 frequency was consistent with TS Surveillance Requirement (SR) requirements (TI 2515/177, Section 04.03.d.1).
- Surveillance frequencies were stated or, when conducted more often than required by TSs, the process for their determination was described (TI 2515/177, Section 04.03.d.2).
- Surveillance method was acceptably established to achieve the needed accuracy (TI 2515/177, Section 04.03.d.3).
- Surveillance procedure included up-to-date acceptance criteria (TI 2515/177, Section 04.03.d.4).
- Procedure 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 procedure and practice 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).
- Procedure 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 procedure to address new vents or different venting sequences were acceptably accomplished (TI 2515/177, Section 04.03.e.1).
- Fill and vent procedure 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).
- 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.

a. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness**

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a full scale emergency preparedness drill on July 27, 2010, and the conduct of an off-hours unannounced call-in drill on August 17, 2010, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. This drill was planned to be evaluated and was included in performance indicator data regarding drill and exercise performance. The inspectors observed emergency response operations in the Operations Simulator and Technical Support Center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee's drill critique to compare any inspector-observed weaknesses with those identified by the licensee's staff in order to evaluate the critique and to verify whether the licensee's staff was properly identifying weaknesses and entering them into the CAP.

This inspection constituted two emergency preparedness drill evaluation inspection samples as defined in IP 71114.06.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Cornerstone: Public Radiation Safety**

2RS5 Radiation Monitoring Instrumentation (71124.05)

This inspection constituted one complete sample as defined in IP 71124.05-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant Final Safety Analysis Report to identify radiation instruments, associated with monitoring area radiological conditions, which included airborne radioactivity, process streams, effluents, materials/articles, and workers. Additionally, the inspectors reviewed the instrumentation and the associated Technical Specification requirements for post-accident monitoring instrumentation including instruments used for remote emergency assessment.

The inspectors reviewed a listing of in-service survey instrumentation including air samplers and small article monitors, along with instruments used to detect and analyze workers' external contamination. Additionally, the inspectors reviewed personnel contamination monitors and portal monitors including whole-body counters to detect workers' internal contamination. The inspectors reviewed this list to assess whether an adequate number and type of instruments are available to support operations.

The inspectors reviewed licensee and third-party evaluation reports of the radiation monitoring program since the last inspection. These reports were reviewed for insights into the licensee's program and to aid in selecting areas for review ("smart sampling").

The inspectors reviewed procedures that govern instrument source checks and calibrations, focusing on instruments used for monitoring transient high radiological conditions, including instruments used for underwater surveys. The inspectors reviewed the calibration and source check procedures for adequacy and as an aid to smart sampling.

The inspectors reviewed the area radiation monitor alarm setpoint values and setpoint bases as provided in the Technical Specifications and the Final Safety Analysis Report.

The inspectors reviewed effluent monitor alarm setpoint bases and the calculation methods provided in the offsite dose calculation manual (ODCM).

b. Findings

No findings were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down effluent radiation monitoring systems, which included at least one liquid and one airborne system. Focus was placed on flow measurement devices and accessible point-of-discharge liquid and gaseous effluent monitors of the selected systems. The inspectors assessed whether the effluent/process monitor configurations align with ODCM descriptions and observed monitors for degradation and out-of-service tags.

The inspectors selected portable survey instruments that were in use or available for issuance and assessed calibration and source check stickers for currency, instrument material condition, and operability.

The inspectors observed licensee staff performance as the staff demonstrated source checks for various types of portable survey instruments. The inspectors assessed whether high-range instruments are source checked on all appropriate scales.

The inspectors walked down area radiation monitors and continuous air monitors to determine whether they are appropriately positioned relative to the radiation sources or areas they were intended to monitor. Selectively, the inspectors compared monitor response (via local or remote control room indications) with actual area conditions for consistency.

The inspectors selected personnel contamination monitors, portal monitors, and small article monitors and evaluated whether the periodic source checks were performed in accordance with the manufacturer's recommendations and licensee procedures.

b. Findings

No findings were identified.

.3 Calibration and Testing Program (02.03)

Process and Effluent Monitors

a. Inspection Scope

The inspectors selected effluent monitor instruments (such as gaseous and liquid) and evaluated whether channel calibration and functional tests were performed consistent with radiological effluent Technical Specifications/ODCM. The inspectors assessed whether: (a) the licensee calibrated its monitors with National Institute of Standards and Technology traceable sources; (b) the primary calibrations adequately represented the plant nuclide mix; (c) when secondary calibration sources were used, that the sources were verified by the primary calibration; and (d) the licensee's channel calibrations encompassed the instrument's alarm set-points.

The inspectors assessed whether the effluent monitor alarm setpoints are established as provided in the ODCM and station procedures.

The inspectors evaluated the basis for changes to effluent monitor setpoints to ensure that an adequate justification exists.

b. Findings

No findings were identified.

Laboratory Instrumentation

a. Inspection Scope

The inspectors assessed laboratory analytical instruments used for radiological analyses to determine whether daily performance checks and calibration data indicate that the frequency of the calibrations is adequate and there are no indications of degraded instrument performance.

The inspectors assessed whether appropriate corrective actions are implemented in response to indications of degraded instrument performance.

b. Findings

No findings were identified.

Whole Body Counter

a. Inspection Scope

The inspectors reviewed the methods and sources used to perform whole body count functional checks before daily use of the instrument and assessed whether check sources were appropriate and aligned with the plant's isotopic mix.

The inspectors reviewed whole body count calibration records since the last inspection and evaluated whether calibration sources were representative of the plant source term and that appropriate calibration phantoms were used. The inspectors looked for anomalous results or other indications of instrument performance problems.

b. Findings

No findings were identified.

Post-Accident Monitoring Instrumentation

a. Inspection Scope

Inspectors selected drywell and containment high-range monitors and reviewed the calibration documentation since the last inspection.

The inspectors assessed whether an electronic calibration was completed for all range decades above 10 rem/hour and whether at least one decade at or below 10 rem/hour was calibrated using an appropriate radiation source.

The inspectors assessed whether calibration acceptance criteria are reasonable, accounting for the large measuring range, and meeting the intended purpose of the instruments.

The inspectors selected two effluent/process monitors that are relied on by the licensee in its emergency operating procedures as a basis for triggering emergency action levels and subsequent emergency classifications, or to make protective action recommendations during an accident. The inspectors evaluated the adequacy of the calibration and availability of these instruments.

The inspectors reviewed the licensee's capability to collect high-range, post-accident iodine effluent samples.

As available, the inspectors observed electronic and radiation calibrations of these instruments to verify conformity with the licensee's calibration and test protocols.

b. Findings

No findings were identified.

Portal Monitors, Personnel Contamination Monitors, and Small Article Monitors

a. Inspection Scope

For each type of these instruments used on site, the inspectors assessed whether the alarm setpoint values are reasonable under the circumstances to ensure that licensed material is not released from the site.

The inspectors reviewed the calibration documentation for each instrument selected and discussed the calibration methods with the licensee to determine whether the licensee's methods were consistent with the manufacturer's recommendations.

b. Findings

No findings were identified.

Portable Survey Instruments, Area Radiation Monitors, Electronic Dosimetry, and Air Samplers/Continuous Air Monitors

a. Inspection Scope

The inspectors reviewed calibration documentation for at least one of each type of instrument. For portable survey instruments and area radiation monitors, the inspectors reviewed detector measurement geometry and calibration methods and had the licensee demonstrate use of its instrument calibrator.

As available, the inspectors selected portable survey instruments that did not meet acceptance criteria during calibration or source checks to assess whether the licensee had taken appropriate corrective action for instruments found significantly out of calibration (greater than 50 percent). The inspectors evaluated whether the licensee had evaluated the possible consequences of instrument use since the last successful calibration or source check.

b. Findings

No findings were identified.

Instrument Calibrator

a. Inspection Scope

As applicable, the inspectors reviewed the current output values for the licensee's portable survey and area radiation monitor instrument calibrator unit(s). The inspectors assessed whether the licensee periodically measures calibrator output over the range of the instruments used through measurements by ion chamber/electrometer.

The inspectors assessed whether the measuring devices have been calibrated by a facility using National Institute of Standards and Technology traceable sources and

whether corrective factors for these measuring devices were properly applied by the licensee in its output verification.

b. Findings

No findings were identified.

Calibration and Check Sources

a. Inspection Scope

The inspectors reviewed the licensee's Title 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source term to assess whether calibration sources used were representative of the types and energies of radiation encountered in the plant.

b. Findings

No findings were identified.

.4 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring instrumentation are being identified by the licensee at an appropriate threshold and are properly addressed for resolution in the licensee CAP. The inspectors assessed whether corrective actions taken by licensee were appropriate.

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 Second Quarter 2010 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 of significance were identified.



.2 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors verified the Reactor Coolant System (RCS) Leakage Performance Indicator for Unit 1. The inspectors reviewed the licensee's RCS leakage tracking surveillance test data from October 1, 2009, through June 30, 2010, to validate the accuracy of the licensee's submittals. 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 and none were identified.

This inspection constituted one RCS Leakage Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index - Emergency Alternating Current (AC) Power System

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported Mitigating Systems Performance Index (MSPI) - Emergency AC Power System Performance Indicator. To determine the accuracy of the performance indicator data reported, performance indicator definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the MSPI derivation reports, Control Room logs, Maintenance Rule database, Licensee Event Reports (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 - Emergency AC Power System Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.4 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI - High Pressure Injection 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 5, 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 - High Pressure Injection System Performance Indicator verification injection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.5 Mitigating Systems Performance Index - Heat Removal System

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI - Heat Removal System 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 5, 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 constitutes one MSPI Heat Removal System Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.6 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors reviewed a sample of plant records and data against the reported MSPI - Residual Heat Removal System 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 5, 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 constitutes one MSPI - Residual Heat Removal System Performance Indicator verification inspection sample as defined in IP 71151.

b. Findings

No findings of significance were identified.

.7 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the Reactor Coolant System (RCS) Specific Activity performance indicator for the period of July 2009 through August 2010. The inspectors used Performance Indicator (PI) definitions and guidance contained in NEI Document 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 6, dated October 2009, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee’s RCS chemistry samples, Technical Specification requirements, issue reports, event reports, and NRC Integrated Inspection Reports for the period of July 2009 through August 2010 to determine if indicator results were accurately reported. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one RCS specific activity sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.8 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Radiological Occurrences performance indicator for the period of July 2009 through August 2010. The inspectors used PI definitions and guidance contained in NEI Document 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 6, dated October 2009, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed electronic dosimetry dose rate, accumulated dose alarm, dose reports, and the dose assignments for any intakes that occurred for selected dates between July 2009 through August 2010 to determine whether indicator results were accurately reported. The inspectors also conducted walkdowns of numerous locked high radiation area and very high radiation area entrances to determine the adequacy of

the controls in place for these areas. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one occupational radiological occurrence sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.9 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent Technical Specification (RETS)/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences performance indicator for the period of July 2009 through August 2010. The inspectors used PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, 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 of 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 July 2009 through August 2010 to determine if indicator results were accurately reported. The inspectors also assessed whether the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose were appropriate. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

40A2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection

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 of significance were identified.

.2 Annual In-Depth Review Sample

a. Inspection Scope

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

- AR 01082317, "ITS Surveillance Scheduled Within 1 Hour of End of 25% Overrun";
- AR 00992875, "NRC FIN 2009004-02: Ineffective Corrective Actions for 1FC004A Stem/Disc Failure."

The inspectors verified the following attributes during their review of the licensee's corrective actions for the above action requests and other related action requests:

- 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;
- Evaluation and disposition of operability/reportability issues;
- Classification and prioritization of the resolution of the problem, commensurate with safety significance;
- Identification of the root and contributing causes of the problem; and
- Identification of corrective actions, which were appropriately focused to correct the problem.

The inspectors discussed the corrective actions and associated action request evaluations with licensee personnel.

This inspection constituted two annual in-depth review samples as defined in IP 71152.

b. Findings and Observations

(1) Use of the 25% Extension Allowance When Scheduling/Performing TS Surveillances and Local Leak Rate Testing

Introduction

During routine plant status reviews, the inspectors recognized what appeared to be a relatively large number of TS surveillances and local leak rate testing (LLRT) activities scheduled/performed using the 25% test interval extension allowed by TS Surveillance Requirement (SR) 3.0.2 and the licensee's Containment Leakage Rate Testing Program. The inspectors requested data from the licensee and reviewed it to determine whether the licensee's practice of routinely scheduling/performing the testing within the 25% extension period was in compliance with the applicable regulatory requirements. Because the inspectors found no clear limitations on the use of the 25% extension in the current licensing basis, no violation of regulatory requirements was identified.

## Discussion

For TS surveillances, TSSR 3.0.2 states, in part, that the specified frequency for each SR is met if the surveillance is performed within 1.25 times the interval specified in the frequency as measured from the previous performance. That means, for example, that a surveillance test with a specified frequency of 92 days would be met if it is performed within 115 days of the previous performance. According to the TS Bases for SR 3.0.2, “[t]he provisions of SR 3.0.2 are not intended to be used repeatedly merely as an operational convenience to extend surveillance intervals (other than those consistent with refueling intervals) or periodic completion time intervals beyond those specified.” There is a similar provision in Operations Requirements Manual (ORM) 1.3.2 for a 25% extension of the test interval for ORM surveillances.

In response to the inspectors’ questions, the licensee provided data for TS and ORM surveillances performed within the 25% extension for the first half of 2010. This included testing during a refueling outage period (January-February 2010). The licensee’s data showed that 22.8% (412 of 1804) surveillances were performed within the 25% extension. While reviewing the data, the inspectors noted the licensee included the 7-day frequency and shorter frequency surveillances routinely performed in operator logs, chemistry sampling, and electrician battery checks in the data. By their nature, these surveillances were rarely performed using the 25% extension. Excluding these surveillance activities from the data and focusing on surveillances with frequencies greater than or equal to 30 days, the 22.8% figure would be about 35%.

In response to the inspectors’ questions and concerns raised with the performance of surveillances within the 25% extension period, the licensee wrote AR 01098830 to evaluate the use of the 25% extension for TS and ORM surveillances by performing a common cause evaluation. The inspectors reviewed the licensee’s common cause evaluation when it was completed. The licensee concluded in its evaluation that “analysis of TS and ORM surveillance performance data indicates, that by simple numbers, CPS makes too much use of the surveillance grace period.” The licensee reviewed data from 2007 through 2010 and the data for 2007, 2008, and 2009 was similar to 2010. The results ranged from 22.1% to 26.5%. The licensee found a number of common causes involving scheduling practices (e.g., use of a 13-week Cycle Plan, bundling of work, flex work, and resource leveling) and schedule disruptions (e.g., forced outages, late refueling outage preparations, and outage recovery). For instance, the licensee found that every third performance of a monthly surveillance was scheduled using the 25% extension because the standard maintenance 13-week Cycle Plan is broken into two 4-week blocks followed by one 5-week block. Other scheduling practices contributing to use of the 25% extension period included:

1. It was common for a surveillance to be scheduled in the proper work week according to the Cycle Plan, and to be performed in that week, but after the due date;
2. Quarterly surveillances were being performed using the 25% extension due to resource leveling and bundling of the testing with other work; and
3. Surveillances were not being performed when they come due, even when the work week was divisionally compatible (e.g., testing on Division 1 equipment during a Division 1 work week).

Based on the prevalence of surveillance testing performed within the 25% extension period, the inspectors discussed with several of the NRC staff in the Office of Nuclear Reactor Regulation whether the licensee was in compliance with TSSR 3.0.2. Based on the collegial review, the inspectors concluded that while it was certainly questionable whether the licensee was meeting the intent as stated in the TS Bases for the use of the 25% extension, there was no actual limitation stipulated in TSSR 3.0.2. In other words, the licensee was in literal compliance with the requirement.

For containment isolation valve LLRT activities, TSSR 3.6.1.1 requires, in part, that the licensee perform required visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program. The Containment Leakage Rate Testing Program is described in TS 5.5.13. Technical Specification 5.5.13 requires, in part, the licensee to establish a program for leakage rate testing of the primary containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B. This program shall be in accordance with the guidelines contained in Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995. In RG 1.163, the NRC approved Nuclear Energy Institute (NEI) 94-01, "Industry Guideline for Implementing Performance-based Option of 10 CFR Part 50, Appendix J," Revision 0, as an acceptable method for complying with the provisions of Option B in 10 CFR Part 50, Appendix J. The licensee implemented its Containment Leakage Rate Testing Program using ER-AA-380, "Primary Containment Leakrate Testing Program," Revision 7. ER-AA-380, Step 1.4 states, in part, that the procedure provides the bases for conforming to RG 1.163 by establishing leakage testing intervals based on the criteria in NEI 94-01. ER-AA-380, Step 4.5.2.3 states, in part, that intervals for Type C testing of containment isolation valves may be extended by up to 25% of the test interval, not to exceed 15 months, for refueling outage surveillances only. ER-AA-380, Step 4.5.2.4 further states, in part, that extension of the test interval for non-outage surveillances shall not be used repeatedly. Section 10.1 of NEI 94-01 allows the licensee to extend the Type C testing intervals by 25% (not to exceed 15 months), but states no limitation. Section 11.3 of NEI 94-01, however, specifies with regard to the 25% extension that it may be allowed "on a limited basis for scheduling purposes only." The NRC staff in RG 1.163 took no exception to the 25% extension allowed by NEI 94-01 and stated in the Federal Register notice that promulgated the final rule incorporating the Option B Performance-Based Requirements into Appendix J, that "[b]y allowing the 25% margin in testing frequency requirements, the NRC has provided the flexibility to accommodate longer fuel cycles."

In response to the inspectors' questions, the licensee provided performance data for LLRT surveillances performed within the 25% extension for the last 5 years. The inspectors requested 5 years worth of data since most LLRT activities were performed during refueling outages and many Type C tests have 5-year test frequencies. The licensee's data showed that about 35% (174 of 495) of all LLRT surveillances were performed within the 25% extension. While reviewing the data, the inspectors noted that the licensee included LLRT activities (some electrical penetrations and selected refueling frequency tests) that were not allowed to make use of the 25% extension. These 82 LLRT activities were all reported as performed on the due date. Including these LLRT activities in the total skewed the data since there was no extension available for them. Excluding these LLRT surveillance activities from the data, the 35% figure would be about 43%.

The inspectors noted that the LLRT data for Type C testing of containment isolation valves with a 5-year frequency reflected a very high proportion of tests performed within the 25% extension period. RG 1.163 states that the NEI guidance in Section 11.3.2 for selecting extended test intervals greater than 60 months for Type C tested components is not endorsed by the NRC. That limits the maximum test interval for Type C tested components to 5 years. Since CPS Unit 1 is on a 2-year refueling cycle, rather than performing many of the 5-year LLRTs that require shutdown plant conditions early at the 4-year point, the licensee has been scheduling/performing them later at the 6-year point. While most, but not all, of the 5-year LLRTs require shutdown plant conditions to perform, over the past 5 years 60% (84 of 140) of all 5-year frequency LLRTs were performed within the 25% extension and just over half of those (48 of the 84) were scheduled/performed near the 6-year point.

The inspectors discussed this observation with the licensee. The licensee's position was that by limiting the use of the 25% extension to only those valves that have demonstrated by their performance that they are eligible to be on an extended frequency and, by only applying the 25% extension in order to be able to schedule testing when the valves can be tested (i.e., during refueling outages), it has met the intent of the NEI guidance and Appendix J, Option B. The licensee's procedure has restricted or in some cases prohibited the use of the 25% extension for non-outage tests.

As with TS surveillance testing performed within the 25% extension period, the inspectors concluded that it was a questionable practice to schedule/perform a large proportion of LLRT activities using the 25% extension period, and in particular to schedule a large number of Type C containment valve tests at the 6-year point. However, absent any other regulatory guidance, the language in Section 11.3 of NEI 94-01 regarding use of the 25% extension "on a limited basis for scheduling purposes only" was too ambiguous for the inspectors to conclude that the licensee did not meet the regulatory requirements. Based on reviewing LLRT data over the past 5 years, it would appear that the licensee scheduled testing such that tests were performed on a reasonably staggered basis. In addition, there have not been a large number of test failures, which would indicate that valve testing intervals and preventive maintenance were generally appropriate.

### .3 Annual Review of Operator Workarounds

#### a. Inspection Scope

The inspectors performed an in-depth review of operator workarounds and assessed the cumulative effect of existing workarounds and other operator burdens. The inspectors reviewed operator workarounds, challenges, control room deficiencies, temporary modifications, and lit and disabled annunciators. The inspectors verified that operator workarounds were being identified at an appropriate threshold; that the workarounds did not adversely impact operators' ability to implement abnormal and emergency operating procedures; and, that the cumulative effect of operator burdens did not adversely impact mitigating system functions. The inspectors also reviewed action requests to verify that appropriate corrective actions were proposed or implemented in a timely manner commensurate with the significance of the issue.

This inspection constituted one annual operator workaround review inspection sample as defined in IP 71152.



b. Findings and Observations

No findings of significance were identified.

.4 Selected Issue Follow-Up Inspection Associated with Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems"; AR 01091157 "Change Generic Letter 2008 Air Void Ultrasonic Test Frequency from Monthly to Quarterly"

a. Inspection Scope and Documentation

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting a decision to change the performance frequency for ultrasonic tests (UT), which the station had committed to performing in response to NRC Generic Letter (GL) 2008-01.

Inspectors observed the UT methodology and actual test performance. Inspectors also observed the usage of test equipment, reviewed the data obtained, and validated the adequacy of the locations chosen for analysis. Inspectors verified that results obtained supported the decision made to reduce this test frequency and that the station maintained compliance with all regulatory commitments provided in response to GL 2008-01. The inspectors verified that the selected CAP entry acceptably addressed the areas of concern associated with the scope of GL 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" (TI 2515/177, Section 04.01).

This review constituted one annual in-depth problem identification and resolution sample as defined in IP 71152. In addition, this inspection effort counts towards the completion of TI 2515/177, which will be closed in a later Inspection Report.

b. Findings

No findings of significance were identified.

40A3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) LER 05000461/2010-002-01, "Excessive Leakage Through Feedwater Isolation Valve 1B21F032B," Supplement 1

On February 3, 2010, after Unit 1 had entered Mode 2 during plant startup from the C1R12 refueling outage, the licensee identified that the LLRT performed on feedwater containment isolation check valve 1B21F032B had failed the acceptance criterion in TSSR 3.6.1.3.11. Technical Specification Surveillance Requirement 3.6.1.3.11 required that the combined leakage rate for both primary containment feedwater penetrations be less than or equal to 2.0 gallons-per-minute (gpm). The measured leakage rate for the penetration with 1B21F032B was 2.5 gpm. The licensee originally reported this valve test failure in LER 05000461/2010-002-00 as a condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety in accordance with 10 CFR 50.73(b)(3)(ii), and as a condition that could have prevented the fulfillment of the safety function of structures or systems needed to control the release of radioactive material and mitigate the consequences of an accident in accordance with 10 CFR 50.73(a)(2)(v). The performance issues related to this event were discussed in

NRC Inspection Report 05000461/2010-003. The inspectors documented a licensee-identified non-cited violation (NCV) of TS 3.6.1.3 for operating with 1E21F032B inoperable as a result of the licensee's failure to implement appropriate preventive maintenance and a licensee-identified NCV of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," for the licensee's failure to provide appropriate quantitative or qualitative acceptance criteria in CPS 9861.05D014, "LLRT Data Sheet for 1MC010," Revision 2.

The licensee submitted Supplement 1 to the original LER to revise the reporting requirements to include an operation or condition prohibited by the plant's TSs in accordance with 10 CFR 50.73(a)(2)(i)(B) and to include additional information regarding the corrective actions.

Licensee Event Report 05000461/2010-002-01 is closed.

This inspection constituted one event follow-up inspection sample as defined in IP 71153.

.2 (Closed) LER 05000461/2008-003-01, "Excessive Leakage Through Feedwater Isolation Valve 1B21F032A," Supplement 1

On January 28, 2008, an LLRT performed on feedwater primary containment isolation check valve 1B21F032A failed the acceptance criterion in TSSR 3.6.1.3.11. The licensee performed maintenance on the valve and retested it satisfactorily. During the root cause evaluation of an LLRT failure for the opposite train feedwater primary containment isolation check valve (1E21F032B) during the Cycle 12 refueling outage in January 2010, the licensee recognized that an LER was never submitted to report the 1B21F032A test failure two years before. The licensee subsequently reported the 1B21F032A test failure in LER 05000461/2008-003-00 as a condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety in accordance with 10 CFR 50.73(b)(3)(ii) and as a condition that could have prevented the fulfillment of the safety function of structures or systems needed to control the release of radioactive material and mitigate the consequences of an accident in accordance with 10 CFR 50.73(a)(2)(v). The performance issues related to this event were discussed in NRC Inspection Report 05000461/2010-003. The inspectors documented a licensee-identified NCV of 10 CFR 50.73(a)(1) for the licensee's failure to submit a required LER within 60 days after discovery of the 1E21F032A LLRT failure and a licensee-identified NCV of TS 3.6.1.3 for operating with 1E21F032A inoperable as a result of the licensee's failure to implement appropriate preventive maintenance.

The licensee submitted Supplement 1 to the original LER to revise the reporting requirements to include an operation or condition prohibited by the plant's TSs in accordance with 10 CFR 50.73(a)(2)(i)(B) and to include additional information regarding the corrective actions.

Licensee Event Report 05000461/2008-003-01 is closed.

This inspection constituted one event follow-up inspection sample as defined in IP 71153.

#### 4OA5 Other Activities

.1 (Open) NRC 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's actions. This inspection effort counts towards the completion of TI 2515/177, which will be closed in a later Inspection Report.

.2 (Open) NRC 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 4OA2, the inspectors confirmed the acceptability of the described licensee's actions. This inspection effort counts towards the completion of TI 2515/177, which will be closed in a later Inspection Report.

.3 (Closed) Temporary Instruction 2515/179, "Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System Pursuant to Title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207)"

a. Inspection Scope

The inspectors confirmed that the licensee reported the initial inventories of sealed sources pursuant to 10 CFR 20.2207 and verified that the National Source Tracking System database correctly reflected the Category 1 and 2 sealed sources in custody of the licensee. Inspectors interviewed personnel and performed the following:

- Reviewed the licensee's source inventory;
- Verified the presence of any Category 1 or 2 sources;
- Reviewed procedures for and evaluated the effectiveness of storage and handling of sources;
- Reviewed documents involving transactions of sources; and
- Assessed the adequacy of licensee maintenance, posting, and labeling of nationally tracked sources.

b. Findings

No findings were identified.

#### 4OA6 Management Meetings

.1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. F. Kearney and other members of the licensee's staff at the conclusion of the inspection on October 7, 2010. The licensee acknowledged the findings presented. Proprietary information was examined during this inspection, but is not specifically discussed in this report.

.2 Interim Exit Meeting Summary (IP 71111.20)

On September 14, 2010, the inspector presented the Crane and Heavy Lift inspection results to Mr. F. Pournia, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that licensee several design documents generated by contractors were considered proprietary. It was agreed that all electronic and paper copies of these proprietary documents would be shredded.

.3 Interim Exit Meeting

On September 24, 2010, the results of an inspection of the radiation monitoring instrumentation program, performance indicator verification, and verification of licensee responses to NRC requirement for inventories of materials tracked in the National Source Tracking System pursuant to Title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207) were discussed with Mr. F. Kearney, and other members of your staff.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

K. Baker, Design Engineering Senior Manager  
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

05000461/2010004-01	URI	Apparent Interaction Between Non-Safety Related and Safety-Related Portions of the NSPS Causing Spurious Component Actuations (Section 1R15.b.(1))
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### Closed

05000461/2010-002-01	LER	Excessive Leakage Through Feedwater Isolation Valve 1B21F032B (Section 4OA3.1)
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05000461/2008-003-01	LER	Excessive Leakage Through Feedwater Isolation Valve 1B21F032A (Section 4OA3.2)
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05000461/2009004-04	URI	RPV Head Strongback, Dryer/Separator Strongback and RPV Head Lifting Lugs Did Not Demonstrate Single Failure Proof Requirements of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," Section 5.1.6
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### Discussed

None

## 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

- Clinton Power Station Individual Plant Examination for External Events Final Report, September 1995
- Clinton Power Station Updated Final Safety Analysis Report, Section 3.4, "Water Level (Flood) Design," Revision 11
- CPS 4303.02, "Abnormal Lake Level," Revision 10
- CPS 4304.01, "Flooding," Revision 5a
- AR 01116277, "Received Annunciator 5013-8E High-High Level Floor/Equipment Drain"

### 1R04 Equipment Alignment

- CPS 3402.01, "Control Room HVAC," Revision 25b
- CPS 3402.01E001, "Control Room HVAC Electrical Lineup," Revision 10b
- CPS 3402.01V001, "Control Room HVAC Valve Lineup," Revision 16e
- CPS 3402.01V002, "Control Room HVAC Instrument Valve Lineup," Revision 6
- M05-1102, "P&ID Control Room HVAC (VC)," Sheet 1, Revision U
- CPS 3314.01, "Standby Liquid Control (SC)," Rev 11b
- CPS 3314.01C001, "SLC Bubbler Blowdown Checklist," Rev 6c
- CPS 3314.01E001, "Standby Liquid Control Electrical Lineup," Rev 9a
- CPS 3314.01V001, "Standby Liquid Control Valve Lineup," Rev 10
- CPS 3314.01V002, "Standby Liquid Control Instrument Valve Lineup," Rev 6
- AR 01020914, "Missed PMT on Replaced Squib Valve, 1C41F004A"
- AR 01064429, "Evaluate Continued Need for LLRT on Containment Penetration 1MC116"
- AR 01083187, "SLC Pump Calculation for NPSH Needs Revision"
- CPS 3503.01E001, "Battery and DC Distribution Electrical Lineup," Revision 12
- CPS 3506.01P003, "Division 3 Diesel Generator Operations," Revision 4
- CPS 3506.01E001, "Diesel Generator and Support Systems Electrical Lineup," Revision 18a
- CPS 3506.01V001, "Diesel Generator and Support Systems Valve Lineup," Revision 13a
- CPS 3506.01V002, "Diesel Generator and Support Systems Instrument Valve Lineup," Revision 11b
- M05-1035, "Diesel Generator Cooling System," Sheet 8, Revision K
- M05-1035, "Diesel Generator Aux System (Starting Air Exhaust and Combustion System)," Sheet 3, Revision AE
- M05-1035, "Diesel Generator Cooling System," Sheet 10, Revision D
- M05-1036, "Diesel Generator Fuel Oil System," Sheet 2, Revision T
- CPS 3316.01, "Containment Combustible Gas Control," Revision 13a
- CPS 3316.01V001, "Containment Combustible Gas Control Valve Lineup," Revision 6
- CPS 3316.01V002, "Containment Combustible Gas Control Instrument Valve Lineup," Revision 5
- CPS 3316.01E001, "Containment Combustible Gas Control Electrical Lineup," Revision 11a

- CPS 3316.01E002, "Containment Combustible Gas Control 120 VAC Electrical Lineup," Revision 7b
- CPS 4411.11, "Hydrogen Control System Operation," Revision 5a
- CPS 9367.04, "Hydrogen Igniter Current/Voltage Test," Revision 27
- CPS 9367.05, "Hydrogen Igniter Temperature Test," Revision 24
- CPS 9068.01, "Hydrogen Mixing System Operability Test," Revision 35c
- CPS 9264.01, "Drywell/Containment Post-LOCA Vacuum Relief Setpoint Check," Revision 29b
- M05-1063, "P&ID Combustible Gas Control System (HG) Clinton Power Station Unit 1," Revision N
- M05-2063, "P&ID Combustible Gas Control System (HG) Clinton Power Station Unit 2," Revision F
- WO 01367024-01, "1HG009A CGCS Compressor 1A Suction Valve Failed to Close," September 9, 2010
- AR 00889247, "'A' Mixing Compressor Suction Valve 1HG009A Failed to Open"
- AR 01006218, "'A' Mixing Compressor Suction Valve 1HG009A Failed to Open"
- AR 01108595, "1HG009A; CGCS Compressor 1A Suction Valve; Failed to Close"
- AR 00826047, "1SX025A: Valve Operator & Valve Positioning Doesn't Match Up"
- AR 00953731, "5010-4D Trouble Isolated Phase Duct Coolers – IA1051 Shut"
- AR 00956424, "1WS019B Cooling Water Valve Found Out of Position"
- AR 00899300, "Spare Main Power Transformer Fans Control Switches Found in Auto"
- AR 00939875, "Secondary Containment LCO Action Not Entered When Required"

#### 1R05 Fire Protection

- 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 9
- OP-CL-201-009, "Control of Transient Combustible Material," Revision 1
- CPS 1893.04M351, "781 Control: Aux. Elect., Inverter & Battery Rooms Pre-fire Plan"; Rev 7
- CPS 1893.04M400, "712 Fuel: Basement Prefire Plan," Revision 5
- CPS 1893.04M740, "800 Turbine Deck Pre-fire Plan"; Rev 5
- CPS 1893.04M801, "699 Screen House: Div 2 & 3 SX Pump Rooms and Tunnel Pre-fire Plan"; Rev 6

#### 1R06 Flooding Protection Measures

- CPS 4304.01, "Flooding," Revision 4e
- CPS 3813.01, "Condenser Pit Level Functional Test," Revision 9a
- CPS 1870.02, "Control of Drain Socks and Plugs," Revision 8
- Clinton Power Station Updated Safety Analysis Report, Revision 13
- NRC Information Notice 2009-006, "Construction-Related Experiences with Flood Protection Features," July 21, 2009
- SL-4576, "Internal Flooding – Safe Shutdown Analysis and INPO SOER No. 85-5 Comparison Evaluation Report" (Sargent & Lundy), January 31, 1990
- M05-1054, "P&ID Turbine Building Floor Drain (TF)," Sheet 1, Revision E
- M05-1054, "P&ID Turbine Building Floor Drain (TF)," Sheet 2, Revision K
- M05-1054, "P&ID Turbine Building Floor Drain (TF)," Sheet 3, Revision F



- M05-1054, "P&ID Diesel Generator Building Floor Drain System (TF) Elevation 737'-0"," Sheet 40, Revision R
- M05-1054, "P&ID Diesel Generator Building Floor Drain System (TF) Elevation 737'-0"," Sheet 41, Revision J
- Engineering Change (EC) 380198, "Use of Floor Drain Socks in Safety Related Areas at CPS," Revision 0
- WO 01312346-01, "Change Out Floor Drain Socks in Power Block 1870.02," May 18, 2010
- WO 00896695-01, "1TF013 Remote Indication Lights Are Both Off," January 31, 2008
- WO 00896695-03, "Replace Actuator 1TF013 Due to Flooding," January 20, 2010
- AR 01023891, "1LSTF001B Failed to Actuate Per 3813.01"
- AR 01092206, "Functionality Review of Condenser Pit Level Switch"
- AR 00221292, "Failed PMT on 'A' Level Switch During 3813.01"
- AR 01074284, "Supplemental Information for Floor Drain Socks Review"
- AR 01072011, "Use of Floor Drain Socks in Safety Related Areas"
- AR 01092970, "Floor Drains in Divisional DG Trench Ways Not As Expected"
- AR 00203272, "Condenser Pit High Level Alarm/1TF013 Closure Broke"
- AR 00458794, "1TF013 Remote Indication Lights Are Both Off"
- AR 00469129, "Maintenance Rule Functional Failure – TF System"
- AR 00497793, "1TF013 Will Not Isolate During Condenser Pit Flooding"
- AR 00560611, "Potential Incorrect Decision By Expert Panel"
- AR 00818292, "Maintenance Rule MPFF Incorrectly Classified As Not MPFF"

#### 1R12 Maintenance Effectiveness

- EC 374726, "Limitorque Actuator Fatigue Life Extension," Revision 0
- ER-AA-302, "Motor-Operated Valve Program Engineering Procedure," Revision 5
- ER-AA-302-1001, "MOV Rising Stem Motor Operated Valve Thrust and Torque Sizing and Set-Up Window Determination Methodology," Revision 6
- ER-AA-302-1006, "Generic Letter 96-05 Program Motor-Operated Valve Maintenance and Testing Guidelines," Revision 9
- ER-AA-310, "Implementation of the Maintenance Rule," Revision 8
- ER-AA-310-1002, "Maintenance Rule Functions – Safety Significance Classification," Revision 3
- ER-AA-310-1003, "Maintenance Rule – Performance Criteria Selection," Revision 3
- ER-AA-310-1004, "Maintenance Rule Performance Monitoring," Revision 8
- NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 2
- AR 01032936, "NOS ID Maintenance Rule Criteria for CW Not Appropriate"
- Maintenance Rule Failure Report for Circulating Water System, September 2008 through September 2010
- "Expert Panel Meeting Minutes – Thursday, March 25, 2010"
- "Circulating Water System Evaluation of Reliability Performance Criteria (Re: IR 1032936)," March 25, 2010
- ER-AA-310-1001, "Maintenance Rule – Scoping," Revision 4
- Maintenance Rule Scoping and Performance Criteria for Turbine Building Ventilation System, July 8, 2010
- Maintenance Rule Failure Report for Reliability Monitoring of Turbine Building Ventilation System, July 2008 through July 2010
- Clinton Power Station Updated Safety Analysis Report, Revision 13
- CPS 8501.25D001, "KAB Relay Calibration Data Sheet," Revision 3b

- AR 00805082, "Engineering Should Evaluate Spare ERAT"
- AR 00849593, "Rejected Service Request on MOV Valve Internals Inspections"
- AR 01081686, "Re-Evaluate MOV Criticality Classifications"
- AR 01084600, "Need to Obtain a MOV HBC Grease Sample"
- AR 01102406, "Evaluate Removing MOVs From ORM and USAR Tables"
- AR 01107428, "1SX01FA: Oil Leaking From MOV"
- AR 01107888, "Need For MOV Risk Rank Reevaluation"
- AR 01119550, "MOV PM Procedure Change Will Adversely Impact CPS"
- AR 01120086, "Interference Seen On MOV Test Trace"
- AR 01122366, "NRC Question On MOV Stroke Times"
- AR 00838044, "1VT03CA: VT 'A' Fan Auto Tripped for No Apparent Reason"
- AR 00868203, "1VT03CA: VT Supply Fan Tripped"
- AR 00866452, "1VT04F: VT Shutdown Due to High DP on the Intake Filters"
- AR 00867272, "1VT01Y: VT Supply Damper Fails to Open"
- AR 01030004, "Run Ventilation Systems Without Filters During Winter Months"
- AR 01029903, "VT Tripped Due to Low Flow (High Suction Filter DP)"
- AR 00860309, "1VT03CA: VT Fans Will Not Remain Running"
- AR 00867276, "1VT01Y Damper Failed Shut"
- AR 00911804, "Need to Verify 1VT09CA/CB/CC Fans Running"
- AR 007236646, "C1R11 Leak Rate Test Failures for Maintenance Rule System 97 Need Evaluated"
- AR 01044721, "Entered Loss of Instrument Air Off Normal 4004.01"
- AR 01048311, "1SA01D Dryer Inlet and Purge Valves Open at Same Time"
- WO 01117352-01, "1E12-F021/RHR C Test Valve to Suppression Pool Valve," September 15, 2010

### 1R13 Maintenance Risk Assessments and Emergent Work Control

- ER-AA-600, "Risk Management," Revision 5
- ER-AA-600-1012, "Risk Management Documentation," Revision 8
- ER-AA-600-1001, "On-Line Risk Management," Revision 6
- WC-AA-101, "On-Line Work Control Process," Revision 17
- WC-AA-104, "Integrated Risk Management," Revision 17
- CPS 3506.01C007, "Checklist to Extend 72 Hour LCO Action to 14 Day LCO for Diesel Generators (ITS 3.8.1.B.4 Bases)," Revision 0
- AR 01043647, "NSPS Circuit Card Not Repairable"
- AR 01104812, "STS Failure, Unexpected Alarms and Data"
- AR 01105478, "1G33F039 Spurious Isolation"
- AR 01105899, "RT Pump A Tripped 4 Seconds After Trip, Should Be 60 Seconds"
- AR 01105900, "STS Controller Power Supply Meter Reading Less Than 4 Amps"
- AR 01105962, "NSPS STS Equipment Classification On E03S and Parts Lists"
- AR 01105965, "1G33AK03B: RWCU "B" Pump Time Delay Relay Does Not Pickup"
- AR 01106292, "Entered 4010.02 Plant Chemistry Off-Normal"
- AR 01106315, "Rx Water Sample Results Enter Action Lvl 1"
- AR 01106516, "Discovered LPCI A Injection Valve Open"
- AR 01107300, "Document STS Failures During 9030.05 Test"
- AR 01108706, "Division 1 STS Universal I/O Card Failed During 9030.05"
- AR 01108708, "Division 1 RCIC Load Driver Card Failed During 9030.05"
- AR 01108749, "Determine Operating Options Of Self Test System"
- AR 01110069, "STS Off-Line"
- AR 01113608, "Division 2 EDG Quick-Start Time > 9080.02 Step 9.1.6 Criteria"

- AR 01115155, "Division 1B [sic] Quick Start Time To Freq >= 60 Hz was 11.580 seconds"
- AR 01115308, "Division 2 DG A3 Relay Replacement Impacts WW 1039 (D3 Work Week)"
- AR 01115312, "Work Week 1102 Overloaded For EMD"
- Prompt Investigation #1042507, "STS Circuit Card 1-B-A16-A112 Division 1 NS4-5 logic card had failed its system test"
- WO 01364893-16, "Post Maintenance Testing of Division 1 NS4-5 Card and AC Load Driver Card 1H13P661-B-A16-A125," August 27, 2010

### 1R15 Operability Evaluations

- "Clinton, Reverse Engineering on 23 O-Rings, CPS-57679" (Test Results from Exelon PowerLabs, LLC Technical Services regarding O-Rings), August 11, 2009
- WO 01258808, "Replace O-Rings for 1C11F009 in C1R12," July 1, 2010
- WO 01268332, "Replace O-Rings for 1C11F182 in C1R12," June 30, 2010
- Operability Evaluation 950308-02, "Non-Safety O-Rings Installed in Safety-Related/EQ Valves," Revision 0
- V70900-45, "Valve, Solenoid 3-Way, Dual Coil," Sheet 27, Revision A
- Vendor Manual: Meggit Safety Systems 107OM4015, "Containment Atmosphere Hydrogen Analyzer – Operation and Maintenance Manual
- EC 370685, "Replace Div 1 H2O2 Containment Atmosphere Monitoring"; Rev 1-4
- CPS 5040-5G, "Trouble H2 CAM Monitor"; Rev 29a
- CPS 5040-5H, "Trouble H2/O2 CAM Div 2 Sys"; Rev 29a
- CPS 9000.10, "Accident Monitoring and Remote Shutdown Instrumentation Log"; Rev 32a
- CPS 9437.17A, "Containment/Drywell Atmosphere H2 Monitoring System Channel Calibration"; Rev 0
- CPS 9437.17, "Containment/Drywell Atmosphere H2/O2 Monitoring System Channel Calibration"; Rev 42a
- 50.59 Screening No. CL-2009-S-011, "Replace Div 1 H2O2 Containment Atmosphere Monitor EC 370685"; Revision 1
- Clinton Power Station Updated Final Safety Analysis Report, Revision 13
- NRC Regulatory Issue Summary 2005-20, "Revision to NRC Inspection Manual Part 9900 Technical Guidance, 'Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety,'" Revision 1
- AR 00950308, "Non-Safety O-Rings Installed in Safety-Related/EQ Valves"
- AR 01021972, "C1R12: Vacuum Breaker 1SX303B IST Failed Closing Test"
- AR 01093674, "Actions Needed by OPS to Declare H2 System Operable"
- AR 01094253, "Unresolved Questions Div 1 H2 Monitor (1CM01SA) – EC 370685"
- AR 01099260, "Div 2 H2O2 Inoperable (1CM01SB)"
- AR 01105478, "1G33F039 Spurious Isolation"
- AR 01106214, "Received Main Control Room Annunciator 5063-1D RCIC Pump Suction Pressure High"
- AR 01106516, "1E12F042A: Discovered LPCI A Injection Valve Open"
- AR 01108387, "Review Common Cause Failure for VP/WO Isolation on 3/15/10"
- AR 01108706, "Division 1 Self Test System Failure Assessment"
- AR 01108708, "Division 1 Self Test System Failure Assessment"
- AR 01108749, "Determine Operating Options of Self Test System"
- AR 01110657, "1C71AK615B: Division 2 Self Test Observations"
- AR 01107679, "Div 3 Battery Room Is At 69F, Required To Be >= To 68F"
- AR 01109546, "Div 3 Battery Room Is 68F And Is An OOS Round"
- AR 01110971, "NRC RI Question On Div 3 Battery Room Temp"
- CPS 8433.01, "Generic Procedure for 125VDC Battery Maintenance," Revision 24

- CPS 9382.01, "125VDC Battery Pilot Cell Check," Revision 35
- WO 00932592-02, "Valve 1WO060 has Erratic Operation," September 13, 2010
- EC 366903, "Review of Division 3 Direct Current (DC) System 1C," Revision 10C
- Design Criteria DC-ME-09-CP, Revision 12, June 25, 1990

#### 1R18 Plant Modifications

- Adverse Condition Monitoring and Contingency Plan, "Degraded I/P 1N66K001A," June 30, 2010
- Operational and Technical Decision Making Plan #1077422, "Offgas Recombiner Drain Control Valve (1N66F016A) I/P Converter (1N66K001A)," June 28, 2010
- EC 380630, "Provide Temporary Air Supply For 1N66F016A To Support Maintenance Of Valve I/P 1N66K001A," Revision 0
- 50.59 Screening Number CL-2010-S-019 for EC #380630, "Provide Temporary Air Supply For 1N66F016A To Support Maintenance Of Valve I/P 1N66K001A," Revision 0
- EC 381213, "Temporary 5VDC Power Supply to Div 1 Self Test in 1H13-P661 Bay B," Revision 0
- AR 01086770, "Need Swagelok Plug Installed On IA Drain Line Valve"
- AR 01111519, "TCC Enhancement for Div 1 STS Temp Power"
- AR 01116280, "Work Not Aligned With OTDMP"
- WO 01346216-01, "I/P For 1N66K001A Recombiner Drain Control Valve," June 29, 2010
- WO 01346216-03, "IM Replace 1N66K001A and Remove Temp IA Supply EC 380630," June 29, 2010
- M10-9084, "Off-Gas System (OG)," Sheet 4, Revision C

#### 1R19 Post-Maintenance Testing

- CPS 8800.01, "Maintenance Procedure for Fisher Controls Diaphragm/Actuators," Revision 36b
- MA-AA-743-310, "Diagnostic Testing and Evaluation of Air Operated Valves," Revision 5
- CPS 9068.03, "Primary Containment Recombiner and Valve Operability Test," Revision 33a
- M05-1052, "P&ID Shutdown Service Water (SX)," Sheet 1, Revision AU
- M10-9105, "P&ID/C&I Diagram Hydrogen Recombiner Room Cooling System (VG)," Sheet 23, Revision A
- M05-1105, "P&ID Hydrogen Recombiner Room Cooling System (VG)," Sheet 4, Revision E
- AR 01108136, "1SX185A Max Friction Is Out of Its Acceptance Criteria"
- CPS 9377.01, "Fire Protection Diesel 24VDC Battery Pilot Cell Check," Revision 29
- CPS 1893.06, "Fire Protection Maintenance and Testing Program," Revision 10d
- CPS 9071.01, "Diesel Driven Fire Pumps Operability Test," Revision 36a
- CPS 3317.01, "Fuel Pool Cooling and Cleanup," Revision 23c
- CPS 9068.01, "Hydrogen Mixing System Operability Test," Revision 35c
- CPS 9068.01D001, "Hydrogen Mixing System Operability Test Data Sheet," Revision 33d
- WO 01279637-02, "Post-Maintenance Test Fuel Pool Cooling Pump 1B Motor," August 13, 2010
- WO 01367024-01, "EM Troubleshoot/Investigate 1HG009A Fail to Close," September 8, 2010
- WO 01367024-02, "Post-Maintenance Test Stroke 1HG009A – CPS 9068.01," September 2, 2010
- WO 01367024-03, "EM Install Quicklook Test Gear/Measure Thrust," September 2, 2010
- WO 01211045-01, "Replace Diesel Fire Pump 'A' Battery Charger Regulator Circuit Boards," July 20, 2010

- WO 01011258-01, "Overhaul Actuator and Replace Accessories 1SX185A," September 2, 2010
- WO 01011258-06, "OPS PMT 1SX185A," September 2, 2010
- EC 380723, "GL 86-10 Evaluation in Support of Revision to CPS 1893.06, 'Fire Protection Maintenance and Testing Program,' for Minimum Acceptable Voltage for the Fire Protection Diesel Engine Battery While on Float Charge," Revision 0
- National Fire Protection Association (NFPA)-20, "Standard for the Installation of Stationary Pumps for Fire Protection," 2010 Edition
- AR 01072095, "Need Engineering Change Request to Lower Fire Protection Battery Acceptance Voltage"
- AR 01099159, "1HG009B at 3626 Strokes Triggers Actuator Refurbishment"
- AR 01101191, "Schedule Setup to Create Unneeded FC Swaps, Increased Dose"
- AR 01100597, "FC Cooling Loop Swap Not Identified On WW 1033 Schedule"
- AR 01108595, "1HG009A; CGCS Compressor 1A Suction Valve; Failed to Close"

1R20 Outage Activities Crane and Heavy Lift Inspection (OpESS FY2007-03)

- Design Record File F13-00062, Analysis of Head Strongback Carousel Due to Increased Loading Configuration, dated April 1993
- General Electric Report MPL No. F13-E008, Dryer and Separator Strongback, dated April 20, 1982
- Illinois Power Letter U-0249 L30-81 (06-19)-L to NRC, Subject: December 22, 1980 letter on Control of Heavy Loads, dated June 22, 1981
- Illinois Power Letter U-0294 L30-81 (09-25)-L to NRC, Subject: Clinton Power Station Units 1 and 2 Docket Nos. 50-461 and 50-462, dated September 25, 1981
- Illinois Power Letter U-06850982-L L30-83 (12-21)-L to NRC, Subject: Clinton Power Station Unit 1 Control of Heavy Loads (NUREG-0612), dated December 21, 1983
- Illinois Power Letter U-0800 L30-85(02-21)-6 B48-85(02-21)-6 1A.120 to NRC, Subject: Clinton Power Station Unit 1 Control of Heavy Loads (NUREG-0612), dated February 21, 1985
- NEI 08-05, "Industry Initiative on Control of Heavy Loads", dated July 2008
- NUREG-0853, Safety Evaluation Report Related to the Operation of Clinton Power Station, Unit No. 1, February 1982
- Supplement No. 2 to NUREG-0853, Safety Evaluation Report Related to the Operation of Clinton Power Station, Unit No. 1, May 1983
- Supplement No. 5 to NUREG-0853, Safety Evaluation Report Related to the Operation of Clinton Power Station, Unit No. 1, January 1986
- Task Interface Agreement 2010-004, "Final Response to Task Interface Agreement Single-Failure-Proof Design for Reactor Pressure Vessel Head Strongback, Dryer/Separator Strongback, and Reactor Pressure Vessel Head Lifting Lugs at Clinton Power Station", dated August 27, 2010, (ADAMS ML No. 101890187)

Condition Reports Reviewed During NRC Inspection (OpESS FY2007-03)

- AR 00966834, "Strongback Unresolved Issue Status"

## 1R22 Surveillance Testing

- CPS 9051.01, "HPCS Pump & HPCS Water Leg Pump Operability," Revision 44
- CPS 9051.01D001, "HPCS Pump & HPCS Water Leg Pump Operability Data Sheet," Revision 45
- CPS 9051.05, "HPCS Discharge Header Filled and Flow Path Verification," Revision 27c
- CPS 9054.01, "RCIC System Operability Check," Revision 43
- CPS 9054.01C002, "RCIC High Pressure Operability Checks," Revision 2f
- CPS 9054.01D002, "RCIC High Pressure Operability Checks Checklist," Revision 23d
- CPS 2700.12, "Division 1 SX System Flow Balance Verification," Revision 6
- CPS 9072.01, "Steam Bypass Valve Tests," Revision 32b
- American Society of Mechanical Engineers (ASME) Operations and Maintenance (OM) Code, Subsection ISTB, "Inservice Testing of Pumps in Light-Water Reactor Nuclear Power Plants," 2004 Edition
- ASME OM Code, Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants," 2004 Edition
- AR 01097917, "Potentially Broke RCIC Suction Check Valve Operator"
- AR 01095477, "Initial Results From Division 1 SX Flow Balance"
- AR 01093693, "SX Flow Balance As-Found Flow Discrepancies"
- AR 01069618, "Locked Valve Throttling Per CPS 3211.01V001"
- AR 01084667, "1C85ADS032: Bypass Valve #4 Would Not Indicate Over 60 Percent Open"
- AR 01097575, "Bypass Valve #4 Position Transmitter Card Found Degraded"
- AR 01102051, "Tracking NRC Questions on SX Flow Balance"
- AR 01118458, "FC Pump Motor Cooler Flow Measurement During SX Flow Balance"
- AR 01092223, "HPCS Valve Operability Surveillance Start Delayed"
- AR 01092226, "Enhancement to 9051.02, HPCS Valve Operability Test"
- AR 01092363, "9051.01 HPCS Pump & Water Leg Pump Resource Requirements"
- AR 01092477, "HPCS Flow Rate Spikes Outside Prescribed Band During 9051.01"
- WO 01332170-01, "OP HPCS Pump & Water Leg Pump Operability (RCIC Storage Tank)," July 19, 2010
- WO 01349084-01, "OP HPCS Discharge Header Filled & Flow Path Verification," July 19, 2010

## 2RS5 Radiation Monitoring Instrumentation (71124.05)

- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 8/12/10
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 7/15/10
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 6/20/10
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 5/14/10
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 4/19/10
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 3/21/2010
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 2/15/10
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 6/20/10
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 1/30/10
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 12/20/09
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 11/13/09
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 10/18/09
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 9/18/09
- 9000.10R20; Log Accident Mon and Remote S/D Pnl Instr Log; dated 8/14/09
- 9437.65A20; CNMT/DW High Range Gamma Mon (CM059) CC (On Line); dated 10/8/09
- 9437.65; (Sections 8.8, 8.10, 8.11, 8.12) (Outage); dated 12/14/09

- 9437.65B20; CNMT/DW High Range Gamma Mon (CM060) CC; dated 5/28/09
- 9437.65; (Sections 8.8, 8.10, 8.11, 8.12) (Outage); dated 12/14/09
- 9437.65C20; CC CNMT/DW High Range Gamma Mon (CM061); dated 1/19/10
- 9437.65C20; CC CNMT/DW High Range Gamma Mon (CM061); dated 7/12/10
- 9437.65D20; CC CNMT/DW High Range Gamma Mon (CM062); dated 11/21/08
- 9437.62F25; CC Calib of Liquid PRM (CC-1RIX-PR037); 07/21/2009
- RP-CL-751; Calibration of the RADECO H-809V, H-809B, HD-29/A, and EBERLINE RAS-1; Revision 0
- RP-CL-751 Attachment 4; RADECO HD-29/A Calibration Data Sheet; dated 3/31/10
- CPS No. 7211.05D006; Reference Reading for Source Check Plaque; 8/21/2010
- RP-CL-726; Operation and Calibration for the Eberline PM-7 Portal Monitors; Revision 2
- RP-CL-726; Attachment D; PM-7 Portal Monitor Calibration Record; Portal Monitor Serial Number 511; 10/11/2009
- RP-CL-812; Operation and Calibration of the Gamma Portal Monitor (PM-12); Revision 3
- RP-CL-812; Attachment A; PM-12 Calibration Record; Instrument Number 120; 1/5/2010
- RP-CL-728; Calibration of the NE Small Article Monitor (SAM); Revision 1
- RP-CL-728-1001; Attachment 1; Calibration Data Sheet; SAM 12 Serial No. 189; 4/25/2010
- CPS No. 7911.52; Calibration of PCM-1; Revision 0a
- CPS No. 7911.52D001; PCM-1 Calibration Data Sheet; Serial No. 1454; 2/15/2010
- CPS No. 7911.53; Calibration of PCM-2; Revision 0a
- CPS No. 7911.53D001; PCM-2 Calibration Data Sheet; dated 11/8/09
- CPS 7910.90; Calibration of the FASTSCAN Whole Body Counter; Revision 4b
- CPS 7910.90F001; Annual FASTSCAN Body Counter Calibration; 9/8/2010
- 2009 Radiation Protection Comparative Report; NOSA-COMP-09-06; AR 849452-06; 11/4/2009
- Focused Area Self-Assessment (FASA); Radiation Monitoring Instrumentation; Assignment Number 01031551; 6/1/2010
- NUPIC Audit/Survey; Exelon Powerlabs (Mid Atlantic Division); NUPIC Audit/Survey Number 20402; 4/21/2009
- Review of 10CFR 60 Source Term Results; 9/20/2010
- Issue 01115988; PM-12 Portal Monitor Not Initialed After Source Check; 9/21/2010
- Issue 01116482; RP Calibration Performed But No Record Exists; 9/22/2010
- Issue 01116487; RP Calibration Performed But No Record Exists; 9/22/2010
- RP-CL-805; Calibration and Operation of the Gamma Calibrator; Revision 0

#### 40A1 Performance Indicator Verification

- LS-AA-2200, "Mitigating System Performance Index Data Acquisition & Reporting," Revision 1
- AR 01050527, "1DG01KA: Loose Governor Linkage"
- AR 01009827, "1DG633PA: Div 1 DG 12VDC Fuel Priming Pump Not Running"
- Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6
- CPS 9000.01D001, "Control Room Surveillance Log – Mode 1, 2, 3 Data Sheet," Revision 52d
- Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6
- MSPI Derivation Reports, Period June 2010, for Heat Removal System, High Pressure Injection System, Residual Heat Removal System, Generation Date July 19, 2010
- RM Document Number CL-MSPI-01, "Clinton MSPI Basis Document," Revision 1
- LS-AA-2001; Collecting and Reporting of NRC Performance Indicator Data; Revision 13

- LS-AA-2140 (Equivalent); Monthly Data Elements for NRC Occupational Exposure Control Effectiveness; July 2009 through August 2010
- 9911.59R20 Rec Gaseous Rad Effluent Surv – Monthly; July 2009 through August 2010

#### 4OA2 Identification and Resolution of Problems

- ER-AA-380, “Primary Containment Leakrate Testing Program,” Revision 7
- Federal Register Volume 60, Number 186, September 26, 1995
- Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," September 1995.
- Nuclear Energy Institute 94-01, "Industry Guideline for Implementing Performance-based Option of 10 CFR Part 50, Appendix J," Revision 0
- Surveillance Testing Performance Data from January 2010 through June 2010
- Local Leak Rate Testing Performance Data from January 2005 through June 2010
- Common Cause Analysis (AR 01098330), “The Use of Grace with Surveillances,” September 7, 2010
- AR 01082317, “ITS Surveillance Scheduled Within 1 Hour of End of 25% Overrun”
- AR 01098830, Request CCA [Common Cause Analysis] for Use of Grace with Surveillances”
- ER-AA-335-007, “Ultrasonic Inspection for Determination of Sedimentation in Piping Systems or Components and Fluid Level Measurements,” Revision 2
- CPS 3309.01, “High Pressure Core Spray,” Revision 16a
- CPS 9051.05, “HPCS Discharge Header Filled and Flow Path Verification,” Revision 27c
- EC 380824, “NRC GL 2008-01 Gas Intrusion Evaluate Changing Periodic UT from Monthly to Quarterly,” Revision 0
- EC 371529, “HPCS Evaluation,” Revision 1
- EC 371609, “Generic Letter 2008-01: Air Intrusion in ECCS Systems: RHR-A/LPCS,” Revision 1
- EC 371659, “Generic Letter 2008-01: Air Intrusion in ECCS Systems: RHR-B/RHR-C,” Revision 1
- EC 371660, “Generic Letter 2008-01: Air Intrusion in ECCS Systems: HPCS,” Revision 1
- AR 00439211, “Plug and Stem Separated on 1FC004A”
- AR 00725079, “1SX014A, Division 1 SX System Isolation Valve Leaks By Seat”
- AR 00828402, “Implement GL 2008-01 Commitments”
- AR 00847216, “NRC Finding 2008004-02: Failure to Evaluate Stray Voltage”
- AR 00847646, “NRC NCV 2008004-03: Inadequate PM of 1SX014A”
- AR 00924603, “1FC004A: FC Surge Tank High Level”
- AR 00976237, “SR Rejection for New PMs for 1FC004A & B Valves”
- AR 00988801, “NRC GL 2008-01 Request for Additional Information”
- AR 00992875, “NRC FIN 2009004-02: Ineffective Corrective Actions for 1FC004A Stem/Disc Failure”
- AR 01067445, “NRC NCV 2010002-01: Transient Combustible Material Control”
- AR 01067453, “NRC NCV 2010002-02: Transient Combustible Material Control”
- AR 01067457, “NRC NCV 2010002-03: Unanalyzed Interconnecting Floor Drains”
- AR 01067460, “NRC NCV 2010002-04: Examination Limitations for a Weld”
- AR 01067467, “NRC FIN 2010002-05: FWLCS Response Resulted in Level 8 Scram”
- AR 01067471, “NRC URI 2010002-06: OPDRV Procedure 50.59”
- AR 01067474, “NRC URI 2010002-07: Cause for Turbine Overspeed Trip”
- AR 01067517, “NRC NCV 2010002-08: SGTS Flow/Heater Operability Surveillance”
- AR 01067520, “NRC URI 2010002-09: Contaminated Individual”
- AR 01090277, “NOS ID Inadequate Extent of Condition for Repeat Failures”
- AR 01090447, “1FC004A Air Line Separated”



- AR 01091157, "Change GL 2008 Air Void Ultrasonic Test Frequency from Monthly to Quarterly"
- AR 01092819, "NRC Questions and Discussion"
- AR 01098890, "NCV 2010003-02: 10CFR50.59 Review of OPDRV Procedure"
- AR 01098906, "NRC NCV 2010003-04: ERO Augmentation Testing"
- AR 01098915, "NRC NCV 2010003-05: Dryer Cavity Gate Seal Failure"
- AR 01098887, "NRC NCV 2010003-01: Reportability for Potential RHR Pump Room Flood"
- AR 01098898, "NRC FIN 2010003-03: Failure to Evaluate EFCV Functionality"
- AR 01099320, "CA 1033113-03 Extension Paperwork"
- Service Request #63892, "New PMs for the 1FC004A & B Valves"
- WO 01349084-02, "EP Perform UT Testing to Check for Accumulated Air (HPCS)," July 19, 2010

#### 4OA3 Follow-Up of Events and Notices of Enforcement Discretion

- LER 05000461/2010-002-01, "Excessive Leakage Through Feedwater Isolation Valve 1B21F032B," Supplement 1, August 23, 2010
- LER 05000461/2008-003-01, "Excessive Leakage Through Feedwater Isolation Valve 1B21F032A," Supplement 1, August 23, 2010

#### 4OA5 Other Activities

- NRC Form 748 (Equivalent); National Source Tracking Transaction Report; Clinton Power Station; 9/22/2010

## LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
CAP	Corrective Action Program
CPS	Clinton Power Station
DC	Direct Current
GPM	Gallons Per Minute
HCU	Hydraulic Control Unit
HPCS	High Pressure Core Spray
IP	Inspection Procedure
LER	Licensee Event Report
LLRT	Local Leak Rate Testing
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation, Office of (NRC)
NSPS	Nuclear System Protection System
ODCM	Offsite Dose Calculation Manual
ORM	Operations Requirements Manual
PARS	Publicly Available Records System
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RETS	Radiological Effluent Technical Specification
RG	Regulatory Guide
RPV	Reactor Pressure Vessel
RT	Reactor Water Cleanup
SR	Surveillance Requirements
SSC	Structures, Systems, and Components
STS	Self Test System
TIA	Task Interface Agreement
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
UT	Ultrasonic Tests
VAC	Volts Alternating Current
WO	Work Order

October 28, 2010

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  
05000461/2010-004

Dear Mr. Pacilio:

On September 30, 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 October 7, 2010, with Mr. F. Kearney, 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, no findings of significance were identified.

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 05000461/2010-004;  
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Letter to M. Pacilio from M. Ring dated October 28, 2010

SUBJECT: CLINTON POWER STATION INTEGRATED INSPECTION REPORT  
05000461/2010-004

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