UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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August 7, 2012

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

SUBJECT: BYRON STATION, UNITS 1 AND 2, NRC INTEGRATED INSPECTION REPORT NOS 05000454/2012003; 05000455/2012003; 07200068/2012001

Dear Mr. Pacilio:

On June 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Byron Station, Units 1 and 2. The enclosed inspection report documents the inspection findings which were discussed at an exit meeting on July 2, 2012, with Mr. T. Tulon 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.

Two NRC-identified findings of very low safety significance (Green) were identified during this inspection. These findings were determined to involve violations of NRC requirements. The NRC is treating these violations as Non-Cited Violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. Additionally, a license-identified violation is listed in Section 4OA7 of this report.

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

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the Resident Inspector Office at the Byron Station.

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 (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Eric R. Duncan, Chief
Branch 3
Division of Reactor Projects

Docket Nos. 50-454, 50-455, and 07200068
License Nos. NPF-37 and NPF-66

Enclosure: Inspection Report No. 05000454/2012003; 05000455/2012003; and 07200068/2012001
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-454; 50-455; 07200068
License Nos:	NPF-37; NPF-66
Report Nos:	05000454/2012003; 05000455/2012003; 07200068/2012001
Licensee:	Exelon Generation Company, LLC
Facility:	Byron Station, Units 1 and 2
Location:	Byron, IL
Dates:	April 1, 2012, through June 30, 2012
Inspectors:	B. Bartlett, Senior Resident Inspector J. Robbins, Resident Inspector R. Jickling, Emergency Preparedness Specialist J. Gilliam, Reactor Engineer R. Langstaff, Reactor Engineer K. Walton, Senior Operations Engineer M. Learn, Reactor Engineer L. Rodriguez, Reactor Engineer J. Tapp, Health Physicist C. Crisden, Emergency Preparedness Inspector, Region I C. Thompson, Resident Inspector, Illinois Emergency Management Agency
Approved by:	E. Duncan, Chief Branch 3 Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS 1

REPORT DETAILS 3

Summary of Plant Status 3

1. REACTOR SAFETY 3
1R01 Adverse Weather Protection (71111.01) 3
1R04 Equipment Alignment (71111.04) 4
1R05 Fire Protection (71111.05) 5
1R06 Flooding (71111.06) 7
1R11 Licensed Operator Requalification Program (71111.11) 7
1R12 Maintenance Effectiveness (71111.12) 9
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13) 9
1R15 Operability Evaluations (71111.15) 10
1R19 Post Maintenance Testing (71111.19) 13
1R22 Surveillance Testing (71111.22) 14
1EP2 Alert and Notification System Evaluation (71114.02) 15
1EP3 Emergency Response Organization Augmentation Testing (71114.03) 15
1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05) 16
1EP6 Drill Evaluation (71114.06) 16

2. OTHER ACTIVITIES 17
4OA1 Performance Indicator Verification (71151.EP01, EP02, EP03) 17
4OA2 Identification and Resolution of Problems (71152) 18
4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153) 24
4OA5 Other Activities 24
4OA6 Management Meetings 26
4OA7 Licensee-Identified Violation 26

SUPPLEMENTAL INFORMATION 1

Key Points of Contact 1

List of Items Opened, Closed, and Discussed 2

List of Documents Reviewed 3

List of Acronymns Used 9

SUMMARY OF FINDINGS

Inspection Report (IR) 05000454/2012003, 05000455/2012003, 07200068/2012001; 04/01/2012 - 06/30/2012; Byron Station, Units 1 & 2; Operability Evaluations; Identification and Resolution of Problems.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors. The findings were considered Non-Cited Violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Assigned cross-cutting aspects were determined using IMC 0310, "Components Within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events, Barrier Integrity

Green. A finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors when licensee personnel failed to identify boric acid accumulation that would have impeded flow from the containment leakage detection trough to the containment sump. The licensee entered this issue into the Corrective Action Program (CAP) as Issue Report (IR) 1339957. Corrective actions included removing the boric acid accumulation from the leakage detection trough and passing water through the drain to verify associated piping was free of obstruction.

The finding was determined to be more than minor because the finding was similar to IMC 0612, Appendix E, Example 4(a). Example 4 focuses on procedural errors. The "not minor if" section in Example 4(a) discussed that if a later evaluation determines that the safety-related equipment was adversely impacted, it was more than minor. The flow obstruction in the leakage detection trough would have delayed the flow of water to the sump thereby delaying any subsequent alarm. Therefore, this performance deficiency adversely impacted the Equipment Performance aspect of the Initiating Events Cornerstone. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, "Characterization Worksheet for Initiating Events Cornerstone." The inspectors answered 'No' to Question 1: "Assuming worst case degradation, would the finding result in exceeding the Technical Specification (TS) limit for any RCS [Reactor Coolant System] leakage or could the finding have likely affected other mitigation systems resulting in a total loss of their safety function?" Therefore, this finding was determined to be of very low safety significance (Green). This finding had a cross-cutting aspect in the Corrective Action Program component of the Problem Identification and Resolution cross-cutting area because licensee personnel failed to ensure that an issue potentially impacting nuclear safety was promptly identified and fully evaluated, and that actions were taken to address safety issues in a timely manner, commensurate with their significance [P.1(d)]. (Section 1R15)

Green. A self-revealed finding with two examples of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when licensee personnel failed to properly torque a RCS pressure boundary valve closed and failed to properly re-install a Reactor Containment Fan Cooler (RCFC) interior access panel during the previous Unit 1 refueling outage. The licensee replaced the valve and reinstalled the RCFC internal access panel upon identification and entered the item into the CAP as IR 1339375 and IR 1347450, respectively. Additional corrective actions included modifying the installation procedure to add clarity in the selection of the proper torque value and to add detail and tracking aids for the RCFC interior access panels.

In accordance with IMC 0612, Appendix B, "Issue Screening," the first example was determined to be more than minor because it was associated with the Procedure Quality attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, this issue increased the risk of a small break loss of coolant accident. The inspectors performed a Phase 1 SDP screening using IMC 0609, Attachment 4, Table 4a, "Characterization Worksheet for Initiating Events Cornerstone." The inspectors determined that the finding would not result in exceeding the TS limit for any RCS leakage or could have likely affected other mitigation systems resulting in a total loss of their safety function.

The second example was determined to be more than minor because it was associated with the Configuration Control attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers, including the containment, protect the public from radionuclide releases caused by accidents and events. Specifically, this issue decreased the availability and reliability of the RCFCs for use during a design basis accident. The inspectors determined that the issue was of very low safety significance (Green) because the finding did not represent a degradation of the radiological barrier function, did not represent a degradation of the barrier function of the control room, did not represent an actual open pathway in the physical integrity of reactor containment, and did not involve an actual reduction in function of hydrogen igniters in the reactor containment.

Both examples had a cross-cutting aspect in the Work Practices component of the Human Performance cross-cutting area [H.4(a)] because licensee personnel failed to properly utilize human error prevention techniques. These two examples of the finding with a cross-cutting aspect were considered as a single NCV. (Section 4OA2)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full power throughout most of the inspection period. The performance of the Unit 1 nonsafety-related Natural Draft Cooling Tower that had been degrading over several years worsened during the inspection period. The decrease in cooling tower efficiency resulted in elevated circulating water temperatures. This in turn resulted in less efficient cooling of the main condenser and increasing condenser vacuum backpressure. During the morning and early afternoon hours, as outside air temperatures warmed, the licensee routinely reduced reactor power levels in order to maintain condenser vacuum margins. As outside temperatures cooled during the evening and nighttime hours, the licensee routinely increased reactor power. On some days, the licensee reduced and subsequently increased unit power many times. For example, during one 72-hour period, the licensee reduced and increased power 54 times. At the end of the inspection period the licensee revised their power change strategies to perform fewer, but larger, changes. As a result, power level changes were altered less frequently.

Unit 2 operated at or near full power throughout most of the inspection period. The performance of the Unit 2 Natural Draft Cooling Tower was similar to Unit 1 with a consequent similar impact upon plant power level changes.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

.1 Readiness For Impending Hot Summer Weather Conditions

a. Inspection Scope

The inspectors evaluated the licensee's preparations for hot summer weather conditions, focusing on the electrical distribution system and the plant chilled water system. During the weeks of May 21, 2012, and May 28, 2012, the inspectors performed a detailed review of severe weather and plant de-winterization procedures and performed general area plant walkdowns. The inspectors focused on plant-specific design features and implementation of procedures for responding to or mitigating the effects of hot summer weather conditions on the operation of the plant. The inspectors reviewed system health reports and system engineering summer readiness review documents for the above systems.

Additionally, the inspectors verified that adverse weather related issues were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

This inspection constituted one seasonal extreme weather readiness inspection sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings were identified.

.2 Readiness For Impending Adverse Weather – High Winds

a. Inspection Scope

Since thunderstorms with potential tornados and high winds were forecast in the vicinity of the facility for the week of June 18, 2012, while emergent work was being performed on the Unit 2 Train B Station Air Compressor, the inspectors reviewed the licensee's overall preparations/protection for the expected conditions. The inspectors toured the plant grounds in the vicinity of the main power transformers, unit auxiliary transformer, station auxiliary transformers, and containment access facility to look for loose debris, which if present could become missiles during a tornado or with high winds. During the inspections, the inspectors focused on plant-specific design features and the licensee's procedure used to respond to tornado and high wind conditions. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Unit 1 Train A Containment Spray (CS) while Unit 1 Train B CS was Out of Service for Maintenance; and
- Unit 2 Train A CS while Unit 2 Train B CS was Out of Service for Maintenance.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and therefore potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report (UFSAR), Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The

inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the Corrective Action Program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

These activities constituted two partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

During the week of June 25, 2012, the inspectors performed a complete system alignment inspection of the Unit 2 Auxiliary Feedwater 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. In addition, a recent modification had been performed which affected certain important air operated valves in the system. 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 WOs 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. Documents reviewed are listed in the Attachment.

These activities constituted one complete system walkdown sample as defined in IP 71111.04-05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Unit 1 Train A Residual Heat Removal (RH) Pump Room - Fire Zone 11.2A-1;
- Unit 1 Train B RH Pump Room - Fire Zone 11.2D-1;
- Unit 1 Train A CS Pump Room - Fire Zone 11.2B-1;
- Unit 1 Train B CS Pump Room - Fire Zone 11.2C-2; and
- Unit 2 Division 22 Miscellaneous Electrical Equipment Room and Battery Room - Fire Zone 5.4-2.

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

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

b. Findings

No findings were identified

.2 Fire Protection – Drill Observation (71111.05A)

a. Inspection Scope

During an announced drill on May 16, 2012, associated with a simulated fire in the outside barrel storage area, the inspectors assessed the timeliness of the fire brigade in arriving at the scene, the fire fighting 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. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings were identified.

1R06 Flooding (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. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area 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:

- Floor Drains Located in Auxiliary Building 364' Elevation, General Area

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

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On May 8, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

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

In addition, the inspectors observed licensed operator performance in the actual plant and the main control room during this calendar quarter.

This inspection constituted one quarterly licensed operator requalification program sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

On June 28, 2012, the inspectors observed control room operators immediately following the loss of the Unit 1 Train B Main Feedwater Pump, while the operators were also addressing elevated outside air temperatures, which caused main generator hydrogen cooling concerns, instrument air dryer failures, spurious fire alarms, main generator reactive load adjustments, and a reported failure of the Unit 2 E Natural Draft Cooling Tower riser. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The performance in these areas was compared to pre-established operator action expectations, procedural compliance, and task completion requirements. Documents reviewed are listed in the Attachment.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.3 Conformance With Examination Security Requirements (71111.11B)

a. Inspection Scope

The inspectors reviewed the facility licensee's physical security controls (e.g., access restrictions and simulator input/output (I/O) controls, simulator software) and integrity

measures (e.g., security agreements, simulator software access) throughout the inspection period.

b. Findings

One licensee-identified finding with an Non-Cited Violation (NCV) is documented in Section 4OA7 of this report. No other findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- Unit 1 and Unit 2 Natural Draft Cooling Tower Fill Degradation; and
- Non-Essential Service Water Increased Silt and Fill Issues.

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

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

b. Findings

No findings were identified

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

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

- Work Week Schedule for the Week of May 21, 2012;
- Unit 2 Train B CS Inoperable while Unit 2 Loop C Steam Generator Power Operated Relief Valve was Inoperable;
- Activities During the Modification of Unit Common Component Cooling Heat Exchanger Discharge Valve 0SX007; and
- Unit 2 Change in Risk Status Due to Emergent Failure of Unit 2 Train B Station Air Compressor during Planned Outage of Unit 1 Train A Station Air Compressor.

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

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

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Steam Generator Margin to Overfill Issues;
- Unit 1 Train A Reactor Containment Fan Cooler Missing Internal Access Hatch;
- Operability Evaluation 12-001, Potential Design Vulnerability in Switchyard Single Open Phase Detection;
- Operability Evaluation 09-001, Diesel Oil Storage Tank Vent Lines Crimp Versus Break;
- Operability Evaluation 12-005, High Energy Line Break (HELB) Load Not considered in Structural Calculation;
- Operability Evaluation 11-005, Turbine Building HELB Input Errors; and
- Unit 1 Containment Leakage Detection System Due to Boric Acid Accumulation in System Drain. (Sample previously credited in Inspection Report 050000454/2012002; 05000455/2012002)

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee’s evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sample of corrective

action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment.

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

b. Findings

(1) (Closed) Unresolved Item 05000454/2012002-03, Boric Acid Accumulation Identified in Leakage Detection Trough

Introduction: A finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors when licensee personnel failed to identify boric acid accumulation that would have impeded flow from the containment leakage detection trough to the containment sump.

Description: During a Unit 1 maintenance outage, the inspectors identified a boric acid leak on sample valve 1PS9365B on the 426' elevation of containment. The 426' elevation of containment had a grated floor; therefore, the inspectors proceeded to the lower levels of containment to determine if any other equipment had been impacted by the leak. On the 377' elevation, the inspectors identified a large area of boric acid accumulation. Radiation Protection (RP) personnel were in containment to decontaminate an area associated with a previously identified leak on 1RC8042B when this additional leak was identified. The inspectors made an RP supervisor that was in the area aware of this additional source of leakage. Additionally, photographs were taken and provided to the Outage Control Center. The licensee entered this issue into their CAP as IR 1339957, "1PS9365 Has Leak From Either Packing or Bonnet."

In preparation for a planned change from Mode 5 to Mode 4, the licensee routinely performed an assessment of containment in accordance with the Containment Loose Debris Inspection procedure, 1BOSR Z.5.b.1-1. The purpose of this inspection was to ensure that the material condition of containment was sufficient to support at power operations. The inspectors performed an independent assessment following the licensee's assessment. The inspectors identified that boric acid associated with the leak identified in IR 1339957 on the 377' elevation was still present. Specifically, boric acid had accumulated in a trough along the wall of the inner containment structure. The accumulated boric acid completely covered the drain in the trough. The purpose of this trough was to collect any potential leakage and direct that leakage to a sump. The flow of water into, as well as the level of this sump was monitored to facilitate the prompt identification of leaks that may occur in containment. The reactor coolant system (RCS) leakage detection instrumentation was required to be operable in Modes 1-4 and Unit 1 was in Mode 4 at the time of this discovery. This issue was entered into the licensee's CAP as IR 1341380. Corrective actions included removing the boric acid accumulation from the leakage detection trough and passing water through the drain to verify associated piping was free of obstruction.

Unresolved Item (URI) 05000454/2012002-03 was opened pending the licensee's completion of their assessment of the issue and the inspectors review of that assessment in NRC Inspection Report 05000454/2012002; 05000455/2012002. A

subsequent evaluation by the licensee determined that the obstruction did not completely block the flow of water to the drain.

The significance of RCS leakage varies widely depending on its source, rate, and duration. Therefore, detecting RCS leakage into containment is necessary. The ability to separate identified leakage from unidentified leakage provides quantitative information to the operators. This information supports the risk assessment process and facilitates timely initiation of corrective actions.

Analysis: The inspectors determined that the failure to identify a flow obstruction in the leakage detection trough was contrary to the requirements of 1BOSR Z.5.b.1-1, "Unit One Containment Loose Debris Inspection," and was a performance deficiency.

The finding was determined to be more than minor because the finding was similar to IMC 0612, Appendix E, Example 4(a). Example 4 focused on procedural errors. The "not minor if" section in Example 4(a) discussed that if a later evaluation determines that the safety-related equipment was adversely impacted, it was more than minor. The flow obstruction in the leakage detection trough would have delayed the flow of water to the sump thereby delaying any subsequent alarm. Therefore, this performance deficiency adversely impacted the Equipment Performance attribute of the Initiating Events Cornerstone.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a for the Initiating Events Cornerstone. The inspectors selected this cornerstone due to the affected equipment being used to inform operations staff of changing conditions in containment. Reactor coolant system leakage was one of many analyzed initiating events. The inspectors answered 'No' to Question 1: "Assuming worst case degradation, would the finding result in exceeding the Tech Spec [Technical Specification] limit for any RCS leakage or could the finding have likely affected other mitigation systems resulting in a total loss of their safety function?" Therefore, this finding was determined to be of very low safety significance (Green).

This finding had a cross-cutting aspect in the CAP component of the Problem Identification and Resolution cross-cutting area because licensee personnel did not ensure that an issue potentially impacting nuclear safety was promptly identified, fully evaluated, and that actions were taken to address safety issues in a timely manner, commensurate with their significance. Specifically, the accumulated boric acid obstructed flow through the leakage detection trough. The cause of this accumulation, leakage from sample valve 1PS9365B, was previously identified and entered into the CAP. [P.1(d)]

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Surveillance procedure 1BOSR Z.5.b.1-1, "Unit 1 Containment Loose Debris Inspection," Revision 15, was written in accordance with 10 CFR Part 50, accomplished an activity affecting quality, and required that the drain trough and floor drains be free of debris and that flow not be impeded. Step 4(a) of 1BOSR Z.5.b.1-1

required licensee personnel to verify that drain trough and floor drains located on the 377' elevation to be free of flow obstructions.

Contrary to the above, on March 14, 2012, the licensee failed to accomplish the "Unit One Containment Loose Debris Inspection," an activity affecting quality, in accordance with the applicable instructions, procedures, or drawings. Specifically, the licensee failed to adequately implement procedure 1BOSR Z.5.b.1-1 to verify that drain trough and floor drains located on the 377' elevation of the containment were free of flow obstructions, in that the inspectors identified boric acid accumulation that would have impeded flow from the leakage detection trough to the sump. Because this violation was of very low safety significance and this issue was entered into the licensee's CAP as IR 1339957, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000454/2012003-01, Leakage Detection Trough with Large Accumulation of Boric Acid Identified)**

URI 05000454/2012002-03 is closed.

1R19 Post Maintenance Testing (71111.19)

.1 Post Maintenance Testing

a. Inspection Scope

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

- Unit 2 Essential Service Water Valve 2SX010 following Modification;
- Unit 1 C Loop Steam Generator Power Operated Relief Valve following Hand Pump Replacement;
- Unit 2 Train B Auxiliary Feedwater Pump following Scheduled Maintenance; and
- Unit Common Component Cooling Heat Exchanger Discharge Valve 0SX007 following Electrical Modification.

These activities were selected based upon the structure, system, and components (SSCs) ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment.

This inspection constituted four post maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- Unit 1 Train A Diesel Generator Routine Monthly Surveillance;
- Unit 1 Train B Auxiliary Feedwater Pump Monthly Surveillance; and
- Unit 1 Train B CS Valve Stroke Test 1BOSR 0.5-2.CS.1-2.

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 UFSAR, 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 (IST) activities, testing was performed in accordance with the applicable version of Section XI of the American Society of Mechnical Engineers (ASME) Code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;

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

Documents reviewed are listed in the Attachment.

This inspection constituted two routine surveillance testing samples and one IST sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation (71114.02)

.1 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors reviewed documents and conducted discussions with Emergency Preparedness (EP) staff and management regarding the operation, maintenance, and periodic testing of the Alert and Notification System (ANS) in the Byron Station's plume pathway Emergency Planning Zone. The inspectors reviewed monthly trend reports and the daily and monthly operability records from August 2010 through May 2012. Information gathered during document reviews and interviews was used to determine whether the ANS equipment was maintained and tested in accordance with Emergency Plan commitments and procedures. Documents reviewed are listed in the Attachment to this report.

This ANS inspection constituted one sample as defined in IP 71114.02-05.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

.1 Emergency Response Organization Augmentation Testing

a. Inspection Scope

The inspectors reviewed and discussed with plant EP management and staff the emergency plan commitments and procedures that addressed the primary and alternate methods of initiating an Emergency Response Organization (ERO) activation to augment

the on shift ERO as well as the provisions for maintaining the station's ERO qualification and team lists. The inspectors reviewed reports and a sample of corrective action program records of unannounced off-hour augmentation tests and pager tests, which were conducted between August 2010 and May 2012, to determine the adequacy of the drill critiques and associated corrective actions. The inspectors also reviewed a sample of the EP training records of approximately 18 ERO personnel who were assigned to key and support positions, to determine the status of their training as it related to their assigned ERO positions. Documents reviewed are listed in the Attachment.

This ERO augmentation testing inspection constituted one sample as defined in IP 71114.03-05.

b. Findings

No findings were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

.1 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope

The inspectors reviewed a sample of Nuclear Oversight (NOS) staff's 2011 and 2012 audits of the Byron Station's EP program to determine that the independent assessments met the requirements of 10 CFR 50.54(t). The inspectors also reviewed samples of corrective action program records associated with the 2011 biennial exercise, as well as various EP drills conducted in 2011 and 2012, in order to determine whether the licensee fulfilled drill commitments and to evaluate the licensee's efforts to identify and resolve identified issues. The inspectors reviewed a sample of EP items and corrective actions related to the facility's EP program and activities to determine whether corrective actions were completed in accordance with the site's corrective action program. Documents reviewed are listed in the Attachment.

This correction of EP weaknesses and deficiencies inspection constituted one sample as defined in IP 71114.05-05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on June 28, 2012, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator to determine whether the event classification, notifications, and protective action recommendations were performed in

accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

2. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill and Exercise Performance (DEP) Performance Indicator (PI) for the period from the third quarter 2011 through first quarter 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the DEP indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; assessments of PI opportunities during pre-designated control room simulator training sessions, performance during the 2011 biennial exercise, and performance during other drills. Specific documents reviewed are listed in the Attachment.

This inspection constitutes one DEP sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Emergency Response Organization Drill Participation

a. Inspection Scope

The inspectors sampled licensee submittals for the ERO Drill Participation PI for the period from the third quarter 2011 through first quarter 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the

NEI 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 6, were used. The inspectors reviewed the licensee’s records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; performance during the 2011 biennial exercise and other drills; and revisions of the roster of personnel assigned to key emergency response organization positions. Specific documents reviewed are listed in the Attachment.

This inspection constitutes one ERO drill participation sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Alert and Notification System

a. Inspection Scope

The inspectors sampled licensee submittals for the ANS PI for the period from the third quarter 2011 through first quarter 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 6, were used. The inspectors reviewed the licensee’s records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI and results of periodic ANS operability tests. Specific documents reviewed are listed in the Attachment.

This inspection constitutes one ANS sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee’s CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrence reviews were proper and

adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the attached List of Documents Reviewed.

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the six month period of July 01 through March 31, 2012, although some examples expanded beyond those dates where the scope of the trend warranted.

As part of this inspection, the inspectors also reviewed issues that could be documented outside the normal CAP such as in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports.

b. Findings

One finding with two examples was identified. The examples are discussed below. Both examples had the same cause and the same cross-cutting aspect.

(1) (Closed) Unresolved Item 05000454/2012002-02: Potential Under-Torque of Valve 1RC8042B

Introduction: The first of the two examples of a self-revealed finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when licensee personnel failed to properly torque an RCS pressure boundary valve closed. The valve closure bolts subsequently relaxed and internal bypass around a diaphragm occurred resulting in a small RCS leak into containment.

Description: On March 11, 2012, the licensee reduced power on Unit 1 to perform robotic inspections inside of containment. Based on the results of the inspections, the licensee shut down Unit 1 and replaced valve 1RC8042B. URI 05000454/2012002-02 was open in NRC Inspection Report 05000454/2012002; 05000455/2012002 pending the licensee's completion of the rework evaluation and the inspector's review and follow up of the evaluation. Subsequently, licensee personnel performed a root cause evaluation and determined that procedure BMP 3100-13, "Kerotest Globe Valve Repair," failed to provide sufficient detail to ensure the proper torque value was selected.

For valve 1RC8042B, BMP 3100-13 required that the maintenance worker select the required torque from a table which contained both stainless steel and carbon steel values. During refueling outage B1R17, the maintenance crews repaired valve 1RC8042B along with 1RC8042D. As the valves contained stainless steel and carbon steel sub-components, the maintenance crews requested their supervisors to provide guidance as to which torque value to use. The supervisor for the crew repairing valve 1RC8042D selected the correct (higher) torque valve. The supervisor for the crew repairing valve 1RC8042B selected the incorrect (lower) torque value.

Several months following restart after the refueling outage, valve 1RC8042B began leaking into containment as the inadequate retention forces allowed reactor coolant to flow around an internal diaphragm. This leakage resulted in erosion and corrosion of the carbon steel yoke threads and eventually resulted in external valve leakage.

The reactor coolant leakage was small and did not raise the daily unidentified leak rate calculations sufficiently to clearly indicate a problem. However, the leak slowly increased containment airborne tritium levels. The increase in containment tritium levels along with an occasional elevated RCS leak rate value eventually caused the licensee to conclude that a small leak existed that needed to be evaluated. Subsequent to the identification of the leak the licensee performed an assessment to determine if they could have identified the leak sooner. The licensee determined the available information was discounted and not well understood, which led to an unnecessary delay in performing a down power to search for the leak. The inspectors agreed with the licensee's determination.

The inspectors reviewed the licensee's root cause analysis of this self-revealed RCS leak documented in IR 1339375. The inspectors performed their own assessment and agreed with the licensee's root cause determination of "… an inadequate maintenance procedure instruction for Kerotest globe valve repair…The maintenance procedure was not written explicitly to apply the torque value based on valve body material." Corrective action included replacing the leaking valve upon identification. Additional corrective actions included modifying the installation procedure to add clarity in the selection of the proper torque value.

Analysis: The inspectors determined that the failure to have adequate work instructions for a Kerotest Globe valve repair was a performance deficiency. The finding was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Procedure Quality attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, this issue increased the risk of a small break loss of coolant accident.

The inspectors performed a Phase 1 SDP screening using IMC 0609, Attachment 4, Table 4a, "Characterization Worksheet for Initiating Events Cornerstone." The inspectors answered 'No' to the question "Assuming worst case degradation, would the finding result in exceeding the Tech Spec [Technical Specification] limit for any RCS leakage or could the finding have likely affected other mitigation systems resulting in a total loss of their safety function." Therefore, example one of this finding was determined to be of very low safety significance (Green).

This example had a cross-cutting aspect in the Work Practices component of the Human Performance cross-cutting area because licensee personnel failed to utilize human error prevention techniques, such as using the correct procedural torqueing requirement [H.4(a)].

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances and shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Licensee procedure BMP 3100-13, Revision 10, "Kerotest Globe Valve Repair," was written in accordance with 10 CFR Part 50, Appendix B and prescribed an activity affecting quality. Step F.1 of procedure BMP 3100-13 required that the maintenance workers select which torque value to use to reassemble the valve body.

Contrary to the above, as of March 14, 2012, the licensee failed to have an adequate procedure for the Kerotest globe valve repair, an activity affecting quality, which included appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Specifically, procedure BMP 3100-13 did not contain the appropriate instructions for determining the torque value to use to reassemble the valve body such that the valve leaked following restart. Because this violation was of very low safety significance and because this issue was entered into the

licensee's CAP as IR 133975, this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. The is the first example of the NCV. **(NCV 05000454/2012003-02; Failure to Have Instructions Appropriate to the Circumstances)**

URI 05000454/2010002-02 is closed.

(2) One Train of Containment Cooling System Inoperable Longer Than Allowed by Technical Specifications Due to Inadequate Work Instructions

Introduction: The second of the two examples of a self-revealed finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when licensee personnel failed to properly re-install a Reactor Containment Fan Cooler (RCFC) interior access panel during the previous refueling outage.

Description: On March 29, 2012, the licensee was performing an inspection inside the Unit 1 Train 'A' RCFC when personnel identified an access hatch that was not properly installed. The hatch was four feet by six feet and allowed air to bypass the safety-related cooling coils.

The licensee determined that the cause of the hatch not being properly installed during the previous refueling outage was an inadequate level of detail provided in the work package. The work package only contained a general work instruction to remove interior panels as necessary. In addition, the RCFC interior hatches did not contain any unique identifiers. Safety-related drawings which were referenced in the work package and might have assisted the workers did not contain any unique identifiers for the interior hatches.

There are four RCFCs in each of the two containments at Byron. Two RCFCs are in each of the two safety-related trains of containment cooling. The failure to properly reinstall the access hatch affected the ability of the Unit 1 Train 'A' RCFC to remove heat from containment when using only the safety-related Essential Service Water (SX) system. However, the 'A' RCFC as well as the other RCFC in the train would still have removed a significant amount of heat following an accident.

The licensee's WO during the refueling outage referenced two safety-related drawings to assist maintenance workers in the identification of the access hatches inside of the RCFCs. The licensee's cause determination team concluded that the drawings failed to adequately identify the internal access hatches. This weakness combined with the lack of detailed work instructions in the WO caused the failure of the workers to ensure that all internal access hatches had been reinstalled following the required maintenance. The inspectors reviewed the licensee's cause determination, interviewed personnel, and assessed other license documents and agreed with the conclusion. The licensee entered this issue into the CAP as IR 1347450 and planned to modify the RCFC maintenance procedures to add detail and tracking aids for the removal of interior access panels prior to the next use of the procedures.

In addition, the licensee reinstalled the missing internal access hatch and inspected the other RCFCs. No other access hatches were found to be uninstalled.

Analysis: The inspectors determined that the failure to have adequate work instructions for the removal and reinstallation of the interior access hatches for the RCFCs was a performance deficiency that required an evaluation using the SDP. The inspectors concluded that this second example of a finding was more than minor in accordance with Appendix B, "Issue Screening," of IMC 0612, "Power Reactor Inspection Reports," because the finding was associated with the Configuration Control attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers, including the containment, protect the public from radionuclide releases caused by accidents and events. Specifically, this issue decreased the availability and reliability of the RCFCs for use during a design basis accident.

The inspectors completed a significance determination of this issue using IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At Power Situations," Phase 1 Screening. The inspectors determined that because the finding did not represent a degradation of the radiological barrier function, did not represent a degradation of the barrier function of the control room, did not represent an actual open pathway in the physical integrity of reactor containment, and did not involve an actual reduction in the function of hydrogen igniters in the reactor containment, the issue was of very low safety significance (Green). In addition, the inspectors contacted the Region III Senior Risk Analysts (SRAs) and requested that a Phase 2 determination be performed. The SRA also determined that the issue was of very low safety significance (Green).

This finding had a cross-cutting aspect in the Work Practices component of the Human Performance cross-cutting area because licensee personnel failed to utilize human error prevention techniques, such as documenting which internal hatches had been removed for maintenance so as to ensure that all hatches were reinstalled at the conclusion of the refueling outage [H.4(a)].

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," required, in part, that activities affecting quality shall be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances and shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Licensee work instructions and safety-related drawings M-1254, Revision F, "RCFC Partial Plan," and M-1250 Revision V, RCFC Partial Plan," were developed in accordance with 10 CFR Part 50, Appendix B, to accomplish an activity affecting quality.

Contrary to the above, as of March 29, 2012, the licensee's work instructions for the repair of RCFCs, an activity affecting quality, failed to have instructions and drawings of a type appropriate to the circumstances. Specifically, drawings M-1254, Revision F; and M-1250, Revision V, failed to adequately identify the internal hatches necessary to accomplish repair activities. Because this violation was of very low safety significance and because this issue was entered into the licensee's CAP as IR 1347450, this second example of a violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. This is the second example of the NCV.
(NCV 05000454/2012002-02; Failure to Have Instructions Appropriate to the Circumstances)

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report 05000454/2012002-00: One Train of Containment Cooling System Inoperable Longer Than Allowed by Technical Specifications Due to Inadequate Work Instructions

The licensee submitted this Licensee Event Report (LER) on May 29, 2012, as an event that could have prevented the fulfillment of a safety system. The inspectors performed follow up on the LER and documented the results of the followup in Paragraph 4OA2 as the second example of a self-revealed example of an NCV.

This LER is closed to NCV 05000454/2012003-02 above.

4OA5 Other Activities

.1 Pre-operational Testing of an Independent Spent Fuel Storage Facility Installation at Operating Plants (60854.1)

a. Inspection Scope

Dry Run Activities

The licensee performed pre-operational dry run activities to fulfill the requirements of the Certificate of Compliance (CoC). Specifically, the licensee performed forced helium dehydration and supplemental cooling system pre-operational testing and training exercises prior to the second Independent Spent Fuel Storage Facility Installation (ISFSI) campaign. These operations had not been performed prior to the first loading campaign as the first campaign's spent nuclear fuel characteristics did not necessitate use of the equipment. The inspectors were on site to observe dry run activities on February 24, 2012, and March 16, 2012.

The inspectors reviewed loading procedures to ensure that they contained commitments and requirements specified in the license, the TS, the Final Safety Analysis Report (FSAR), and Title 10 of the Code of Federal Regulations (CFR) Part 72.

b. Findings

No violations of NRC requirements were identified.

.2 Review of 10 CFR 72.212(b) Evaluations at Operating Plants (60856.1)

a. Inspection Scope

Review of Site Characteristics Against Safety Analysis Report and Safety Evaluation Report

The inspectors evaluated the licensee's compliance with the requirements of 10 CFR 72.212 and 10 CFR 72.48. The inspection consisted of interviews with cognizant personnel and review of documentation.

During the licensee's initial loading campaign Holtec HI-STORM 100 CoC 1014, Amendment 3, was used under the general license process; however, for the licensee's

second campaign HI-STORM 100 CoC 1014, Amendment 7 was used. A written evaluation was required per 10 CFR 72.212(b)(5), prior to use, to establish that the conditions of the CoC have been met. "Byron Nuclear Power Station, Units 1 and 2, 10 CFR 72.212 Evaluation Report," Revision 3, dated February 2012, documented the evaluations performed by the licensee.

The inspectors reviewed and assessed the licensee's 10 CFR 72.212 Evaluation Report. The inspectors determined whether applicable reactor site parameters, such as fire and explosions, tornadoes, wind-generated missile impacts, seismic qualifications, lightning, flooding and temperature, had been evaluated for acceptability with bounding values specified in the Holtec HI-STORM 100 FSAR and associated analyses.

b. Findings

No violations of NRC requirements were identified.

.2 Operation of an Independent Spent Fuel Storage Facility Installation at Operating Plants (60855.1)

a. Inspection Scope

The inspectors observed and evaluated the licensee's loading of the second canister during the licensee's second ISFSI loading campaign to verify compliance with the CoC, TS, regulations, and associated procedures.

The inspectors observed the heavy load movement of the transfer cask (HI-TRAC) from the spent fuel pool to the dry decontamination pit inside the Fuel Handling Building. The inspectors also observed multi-purpose canister (MPC) processing operations, including decontamination and surveying, MPC welding, non-destructive weld examinations, MPC draining, forced helium dehydration, helium backfilling, and the use of the supplemental cooling system.

During performance of these activities, the inspectors evaluated the licensee staff's familiarity with procedures, supervisory oversight, and communication and coordination between the groups involved. The inspectors reviewed loading and monitoring procedures and evaluated the licensee's adherence to these procedures.

The inspectors performed tours of the ISFSI pad to assess the material condition of the pad and the loaded storage casks (HI-STORM). The inspectors reviewed documentation of the licensee's ISFSI radiation monitoring program. Additionally, the inspectors performed independent radiation surveys around the ISFSI pad and loaded HI-STORM casks. The inspectors reviewed the contamination and radiation levels from a previously loaded MPC during the campaign to determine whether they were below the regulatory limits. The inspectors also reviewed the As-Low-As-Is-Reasonably-Achievable (ALARA) Work-In-Progress Review for the loading of the previous cask to determine the adequacy of the licensee's radiological controls and to ensure that radiation worker doses were ALARA and that project dose goals could be achieved.

The inspectors attended licensee briefings to assess the licensee's ability to identify critical steps of the evolution, potential failure scenarios, and tools to prevent errors.

The inspectors reviewed the licensee's program associated with fuel characterization and selection for storage. The inspectors reviewed cask fuel selection packages to verify that the licensee was loading fuel in accordance with the CoC TS. The licensee did not plan to load any damaged fuel assemblies during this campaign.

The inspectors reviewed issue reports and the associated follow-up actions that were generated since the licensee's last loading campaign. The inspectors reviewed the licensee's 10 CFR 72.48 screenings.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On July 2, 2012, the inspectors presented the inspection results to Mr. T. Tulon, and other members of the licensee staff.

The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

On April 13, 2012, the inspectors presented the inspection results of the ISFSI inspection to members of the licensee management and staff. Licensee personnel acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

On June 27, 2012, the inspectors presented inspection results of the licensed operator examination security issue to Mr. S. Gackstetter and other members of the licensee staff. No proprietary information was identified during the interim exit.

On June 30, 2012, the inspectors presented the inspection results of the Emergency Preparedness Program inspection to members of licensee management and staff. No proprietary information was identified during the interim exit.

4OA7 Licensee-Identified Violation

The following violation of very low significance (Green) or Severity Level IV was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as an NCV:

- Title 10 CFR 55.49, "Integrity of Examinations and Tests," requires, in part, that the licensee shall not engage in activities that compromises the integrity of any application, test, or examination required by 10 CFR Part 55. Contrary to the above, on March 30, 2012, at the Clinton Power Station, the licensee identified activities that compromised the integrity of the examinations required by 10 CFR Part 55. Specifically, the licensee identified that the control room simulator's plant process computer model was saving sequence of events files

on a routine basis, which contained examination materials related to examinations required by 10 CFR Part 55. A licensee investigation determined that the same condition existed at other Midwest Exelon sites, including the Byron Station. The licensee determined that some of the files contained examination materials related to examinations required by 10 CFR Part 55. The integrity of a test or examination is considered compromised if any activity, regardless of intent, affected, or, but for detection, would have affected the equitable and consistent administration of the test or examination.

Although the examination materials were available for scrutiny by unauthorized personnel, (compromised), the licensee was able to demonstrate that the files were not readily viewable, required interpretation and additional administrative controls were in place that would likely inhibit access to, and reconstruction of simulator events. No individuals had an unfair advantage in taking any NRC-related examinations. Therefore, this finding was of very low safety significance (Green). This issue was documented in the facility's corrective action program as IR 1350674. Corrective actions for this issue included revising the simulator's software to delete data from the sequence of events files being generated by the simulator upon reset of the simulator.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

B. Youman, Plant Manager
D. Gudger, Regulatory Assurance Manager
J. Langan, Regulatory Assurance Licensing Engineer
B. Spahr, Maintenance Director
D. Drawbaugh, Emergency Preparedness Manager
B. Kartheiser, Emergency Preparedness Coordinator
S. Kerr, Work Management Manager
D. Spitizer, Regulatory Assurance
T. Eliakis, ISFSI Project Manager
T. Hulbert, Regulatory Assurance Assistant
S. Briggs, Operations Director

Nuclear Regulatory Commission

E. Duncan, Chief, Branch 3, Division of Reactor Projects

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000454/2012003-01	NCV	Leakage Detection Trough with Large Accumulation of Boric Acid Identified (Section 1R15)
05000454/2012003-02	NCV	Failure to Have Instructions Appropriate to the Circumstances (Section 4OA2)

Closed

05000454/2012002-02	URI	Potential Under-Torque of Valve 1RC8042B (Section 4OA2)
05000454/2012002-03	URI	Boric Acid Accumulation Identified in Leakage Detection Trough (Section 1R15)
05000454/2012003-01	NCV	Leakage Detection Trough with Large Accumulation of Boric Acid Identified (Section 1R15)
05000454/2012003-02	NCV	Failure to Have Instructions Appropriate to the Circumstances (Section 4OA2)
05000454/2012-002-00	LER	One Train of Containment Cooling System Inoperable Longer Than Allowed by Technical Specifications Due to Inadequate Work Instructions

Discussed

None

LIST OF DOCUMENTS REVIEWED

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

Section 1R01: Adverse Weather Protection (Quarterly)

- IR 1360541; Not Enough Charcoal Filters on Hand for Summer Readiness, April 30, 2012
- IR 1360553; Byron Summer Readiness Maintenance Review Results, April 30, 2012
- IR 1361366; Summer Readiness Contingency Work Packages Not Ready, April 26, 2012
- IR 1365484; 2012 Transformer Replacement Summer Readiness Exceptions, May 11, 2012
- WC-AA-107; Summer Seasonal Readiness, June 1 through August 31, 2012
- Plant System Readiness Review; System AP, Revision 9
- IR 1360510; Summer Readiness Contingency WO Review Gaps, April 28, 2012
- System Engineer System Summary Sheet/Recommendation Form
- Certification of 2012 Summer Readiness, May 15, 2012
- OP-AA-108-107-1001; Station Response to Grid Capacity Conditions, Revision 4
- OP-AA-108-107-1002; Interface Procedure Between ComEd/PRCO and Exelon Generation (Nuclear/Power) for Transmission Operations, Revision 6
- WC-AA-107; Seasonal Readiness, Revision 9

Section 1R05: Fire Protection (Quarterly)

- FZ 5.4-2; Auxiliary Building 451'-0" Elevation, Division 22 Miscellaneous Electrical Equipment and Battery Room, Rev.0
- A-269; Drawing, Auxiliary Building Main Floor Area 4, Rev. AP
- S-1328; Drawing, Auxiliary Building Roof Framing Plan Area 4, Rev. AJ

Corrective Action Documents As a Result of NRC Inspection

- IR 1367933; NRC Observed Fire Drill, May 17, 2012

Section 1R06: Flooding

- 0BOSR WF-SA1; Auxiliary Building Floor Drain Semi-Annual Surveillance, Rev. 6
- A-223; Auxiliary Building Upper Basement, Floor Plan EL. 364'-0" Area 6, Rev. BM

Corrective Action Documents As a Result of NRC Inspection

- IR 1362200; 0BOSR WF-SA1 Acceptance Criteria Needs Engineering Calc., May 3, 2012

Section 1R12: Maintenance Effectiveness (Quarterly)

- IR 1349587; Investigate Unit 1 & 2 CW Flume Temperature Differences, April 3, 2012
- IR 1352076; 2E NDCT Riser Pipe Rupture, April 10, 2012
- IR 1353164; Leak at U1 NDCT 1B Riser at Clamp, April 12, 2012
- IR 1357297; U2 NDCT Cold Basin Water Lapping Out West Door Area, April 23, 2012
- IR 1358209; U2 NDCT Cold Basin Water Wave Lapping Out West Door Area, April 25, 2012

- IR 1361821; Rapid Rise in U1 NDCT Debris Fence Delta Level, May 3, 2012
- IR 1363647; U1 NDCT 1B Riser Leak, May 7, 2012
- IR 1363702; Recommend Temporary Set Point Change, May 7, 2012
- IR 1364085; What is the Plan for CW Blowdown, May 8, 2012
- IR 1364405; Safety Concerns with the Operation of CW PP Intakes, May 9, 2012
- IR 1366347; U1 NDCT Debris Fence Level at 1.5 Feet, May 14, 2012
- IR 1366348; U2 NDCT Debris Fence Level at 1.5 Feet, May 14, 2012
- IR 1366507; Adverse Trend Identified with Performance of the NDCT, May 15, 2012
- IR 1367711; Vendor Damaged 0C CW M/U Seal Injection Pipe Coupling, May 17, 2012
- IR 1369171; Improper Grouting of 0C CW M/U Base Plate to Foundation, May 21, 2012
- IR 1371687; Fill Damage to 2F NDCT Riser Pipe, May 29, 2012
- IR 1373743; Excessive CW Material in U1 Debris Fence, June 2, 2012
- IR 1373797; 1B CW Riser Piping Significantly Degraded, June 3, 2012
- IR 1374981; U2 CW Water Outfall Screen High Delta Level, June 6, 2012
- IR 1374981; U1 CW Water Outfall Screen High Delta Level, June 6, 2012
- IR 1379221; U2 NDCT Outfall Screen High Delta Level June 18, 2012
- IR 1380630; 1F NDCT Riser Leak, June 21, 2012
- IR 1381098; U2 CW Box DP Pegged High, Tube Sheet Fouling, June 22, 2012
- IR 1381376; Falling Concrete on North Side of U2 NDCT, June 24
- IR 1383022; U2 NDCT 2E Riser Leaking, June 28, 2012
- IR 1383848; 2E Riser Leakage has Worsened, June 30, 2012

Section 1R13: Maintenance Risk Assessments & Emergent Work control

- IR 1358649; DSA – Work Not Performed Due to OLR Not Evaluated, April 26, 2012
- IR 1378982; 2B SAC Tripped on Low Bearing Oil Pressure, Revision 21
- Online Risk Evaluation; Week of June 11, 2012, Revisions 0 through 6
- Online Risk Evaluation; Week of June 18, 2012, Revisions 0 through 9

Section 1R15: Operability Evaluations (Quarterly)

- BY-MISC-017; Risk Profile Improvements for Single Phase Conditions, Revision 0
- EC 374391 010; OP Eval 09-001, DOST-DG Vent Lines Crimp Vs Break, May 21, 2012
- EC 383599 003; BYR OP Eval 11-005, Turbine Building HELB Input Errors, October 05, 2011
- EC 387590 002; Potential Design Vulnerability in Switchyard Single Open Phase Detection, May 18, 2012
- EC 389402 000; OP Eval 12-005, HELB Load Not Considered in Structural Calculation, June 05, 2012
- 1BOSR Z.5.b.1-1; Unit One Containment Loose Debris Inspection, Rev. 15
- OP-AA-108-108-1001; Drywell / Containment Closeout, Rev. 1
- A-336; Drawing, Containment Building Basement Floor Plan Area 4, Rev. Q
- A-335; Drawing, Containment Building Basement Floor Plan Area 3, Rev. T
- A-334; Drawing, Containment Building Basement Floor Plan Area 2, Rev. U
- A-333; Drawing, Containment Building Basement Floor Plan Area 1, Rev. W
- IR 1378106; Potential Impact from Reduced SG PORV Relief Capacity, June 14, 2012
- IR 1359137; Probable Reduced SG PORV Capacity for Original Valves, April 26, 2012
- EC 367065; Op Eval 07-007, Main Steam PORV Steam Relief Capacity, Rev. 4

Corrective Action Documents As a Result of NRC Inspection

- IR 1339957; 1PS9365B Has Leak From Either Packing Leak or Bonnet, March 12, 2012
- IR 1341380; NRC Identified Boric Acid Covering Floor, March 15, 2012
- IR 1382405; NRC (B1M03) Unit 1 IMB Drain Covered with Boric Acid, June 27, 2012

Section 1R19: Post Maintenance Testing (Quarterly)

- IR 1370582; PMT Run Required for "B" AF PP TS-1 Opening for Battery Test, May 25, 2012
- IR 1370734; Evaluate Test Frequency for 2AF01EA-B, May 25, 2012
- 2BOSR 0.5-2.SX.3-3; Unit 2 Position Indication Test of 2SX004, 2SX010, 2SX011, 2SX033, 2SX034, and 2SX136
- WO 1423904; OPS PMT: Stroke 2SX010 Using BOP SX-T3, May 23, 2012
- 1BOSR 6.3.5-19; Unit 1 Main Steam System Containment Isolation Valve Stroke Test, Rev. 4
- 1BOSR MS-R1; Unit 1 Manual Stroke of the S/G PORVs 18 Month Surveillance, Rev. 5
- 2BOSR 0.5-3.AF.1-2; Unit 2 ASME Surveillance Requirements for the B Train Auxiliary Feedwater SX Supply Valves, Rev. 10
- 0BOSR 0.5-3.SX.1-3; Unit 0 Test of the Unit 0 Component Cooling Water Heat Exchangers Essential Service Water Throttle and Outlet Isolation Valves, Rev. 3

Section 1R22: Surveillance Testing (Quarterly)

- 1359972; 1B AF STT and PIT Procedures Don't Work Together, April 28, 2012
- 1325427; Unit 1 & 2 AF013's Stem Lube Conflicts with C&T Level 4, February 10, 2012
- 1197504; 1AF013D Local Indication Shows 10% Open with Valve Closed, April 4, 2011
- 1197493; 1AF013A Local Indication Shows 70% Open with Valve Closed, April 4, 2012
- 1BOSR 0.5-2.AF.1-2; Unit 1 1AF013 E/F/G/H Stroke Test, Rev. 5
- 1BOSR 7.5.4-2; Unit 1 Diesel Driven Auxiliary Feedwater Pump Monthly Surveillance, Rev. 14
- 1BOSR 5.5.8.AF.5-2b; Unit 1 Group B Inservice Testing Requirements for Diesel Driven Auxiliary Feedwater Pump 1AF01PB, Rev. 1
- 1BOSR 8.1.2-1; Unit 1 1A Diesel Generator Operability Surveillance, Rev. 20
- IR 1312027; 1A DG Lower JW Cooler Leaking from End Cover Bolting, January 11, 2012
- IR 1301853; 1A DG R-9 Fuel Injector Tell Tale Drain Leaking, December 31, 2011
- IR 1300657; 1A DG JW Heater Not Controlling Temperature in Automatic, December 10, 2011
- IR 1227745; 1A DG Possible Water in Crank Case, June 12, 2011
- IR 1212228; 1A DG Generic Letter 89-13 Inspection Relief Requested, May 5, 2011
- IR 1028474; 1A DG JW Leak at R-9 Supply Flange – 30 Drops Per Minute, February 10, 2010

1EP2 Alert and Notification (ANS) Evaluation

- Offsite Emergency Plan Alert and Notification System Addendum for Byron Station; November 2009
- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan Section E; Revision 21
- EP-AA-1002; Exelon Nuclear Radiological Emergency Plan Annex for Byron Station, Section 4; Revision 29
- Byron Station Warning System Annual Maintenance & Operational Reports; June 15, 2011
- Byron Station Monthly Siren Availability Reports; August 2010 – June 2012
- Exelon Semi-Annual Siren Reports; July 2010 and December 31, 2011
- IR 1254150; Semi-Annual Review of 1st Half of 2011 Siren Data; August 22, 2011
- IR 1245065; Single Siren Failures; July 28, 2011

1EP3 Emergency Response Organization Augmentation Testing

- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan, Sections B and N; Revision 21
- EP-AA-1002; Exelon Nuclear Radiological Emergency Plan Annex for Byron Station, Section 2; Revision 29
- EP-AA-112-100-F-06; Midwest ERO Notification or Augmentation; Revision O
- TQ-AA-113; ERO Training and Qualification; Revision 19
- Quarterly Unannounced Off-Hours Call-In Augmentation Drill Results; May 2010 – May 2012
- Emergency Response Organization Call-Out Roster; May 18, 2012
- IR 1367175; May 2021 Unannounced Off-Hours Call-In Augmentation Drill 2 Duty ERO Did Not Respond; May 16, 2012

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

- EP-AA-120; Section 4.4, Review of Actual Events; Revision 14
- EP-AA-120-1001; 10 CFR 50.54(q) Change Evaluation; Revision 7
- EP-AA-121; Emergency Response Facilities and Equipment Readiness; Revision 11
- EP-AA-121-F-02; Byron Station Equipment Matrix; Revision 1
- BRP 5800-3; Area Radiation Monitoring System Alert/High Alarm Setpoints; Revision 25
- BRP 5820-12; Response to Area and Process Radiation Monitor LCOARS or Out-of-Service Conditions; Revision 29
- BRP 5820-14; Process Radiation Monitoring System Alert/High Alarm Setpoints; Revision 44
- LS-AA-126-1005; Check-In-Self-Assessment Emergency Preparedness Report; April 25, 2012
- NOSA-BYR-12-03; Emergency Preparedness Audit Report; April 27, 2012
- NOSA-BYR-11-03; Emergency Preparedness Audit Report; April 15, 2011
- 0BOSR CQ-1; Test of the Employee Alarm System; Revision 6
- WC-AA-106; Work Screening and Processing; Revision 19
- Monday Muster Meeting EP Weekly Newsletter; June 25, 2012
- Byron Station January 30, 2012, Unusual Event Report; February 27, 2012
- Byron Station February 28, 2012, Unusual Event Report; March 26, 2012
- List of Inaudible Public Address System Locations and Status; May 29, 2012
- Biennial Letters of Agreement; October 11, 2011
- Evacuation Time Estimates for the Byron Station; December 2003
- UFSAR, Table 11.5-1; Airborne Process and Effluent Monitors; Revision 7
- IR 1358442; NOS ID-Errors In Mailing List For EP Information Brochure; April 25, 2012
- IR 1353670; TSC HVAC Equipment Vulnerability; April 13, 2012
- IR 1320571; Byron Fire Department Response to Unusual Event; January 31, 2012
- IR 1319175; Additional Areas Are Deficient on the Quarterly Public Address Test; January 27, 2012
- IR 1300315-10; NOS Objective Evidence Report; EP Offsite Agency Interface
- IR 1269312; MET Tower Wind Direction Erratic; September 28, 2011
- IR 1267919; Request For Additional Clarification For EAL HU6; September 25, 2011
- IR 1247327; Exercise-OSC Failed Demonstration Criteria; August 3, 2011
- IR 1237774; Pre-Exercise TSC Failed Demonstration Criteria; July 8, 2011
- IR 1130872-10; NOS Objective Evidence Report; EP Offsite Agency Interface

4OA1 Performance Indicator Verification

- LS-AA-2110; Monthly Data Elements for NRC ERO Drill Participation; September 2011 - March 2012

- LS-AA-2120; Monthly Data Elements for NRC Drill/Exercise Performance; July 2011 - March 2012
- LS-AA-2130; Monthly Data Elements for NRC Alert and Notification System Reliability; July 2011 - March 2012
- Byron ANS Test Reports; July 2011 - March 2012
- IR 1304945; Training-DEP Failures for LORT Annual Exam Cycle; December 20, 2011

Section 4OA2: Identification and Resolution of Problems (71152)

- IR 1071667; Non-Conservative Degraded Voltage Time Delay With a Due Date of September 13, 2013, May 20, 2010
- IR 1237140; Non-Conservative Input to HELB Analysis, July 6, 2011
- IR 1275710; Braidwood NCV – Non-Conservative EQ Classification in HELB, October 12, 2011
- IR 1288474; Potential Green NCV – Classification of EQ Zones from HELB, November 8, 2011
- IR 1354220; Need to Replace Primary Rosettes on S.O#01Y017B4-7, April 16, 2012
- IR 1350467; Mass and Energy Analysis Could Impact UHS Temp and Inventory Limits, April 8, 2012
- IR 1359137; Probable Reduced SG PORV Capacity for Original Valves, April 26, 2012
- IR 1359198; DG Full Load Reject Testing, April 26, 2012
- IR 1359686; Chillers in TSC Computer Room Not Providing Adequate Cooling, April 27, 2012
- IR 1360458; Recommended Work Not Performed Prior to RTS, April 30, 2012
- IR 1361284; 1CS001B STT Acceptance Criteria Data Sheet Not Revised, May 02, 2012
- IR 1361939; Chart Recorder Not Logged into Temporary Change Tracking Log, May 03, 2012
- IR 1362451; 2TO081 Found Closed, Valve Should Have Been Opened, May 04, 2012

Section 40A5: Other Activities

- ALARA Work-In-Progress Review; 2012 Dry Cask Storage Campaign; March 29, 2012
- BFP FH-20; Operation of Fuel Handling Building Crane; Revision 26
- BFP FH-35; Contingency Fuel Handling Building Crane Operations; Revision 0
- BFP FH-64; Transporter Operations; Revision 7
- BFP FH-65; Spent Fuel Cask Site Transportation; Revision 10
- BFP FH-68; HI-TRAC Preparation; Revision 3
- BFP FH-69; HI-TRAC Movement within the Fuel Building; Revision 10
- BFP FH-70; HI-TRAC Loading Operations; Revision 9
- BFP FH-71; MPC Processing; Revision 12, 13, 14 and 15
- BFP FH-72; HI-STORM Processing; Revision 2
- BFP FH-79; MPC Alternate Cooling; Revision 4
- BFP FH-83; Spent Fuel Cask Contingency Actions; Revision; Revision 3
- BHP 4200-101; General Inspection of Fuel Handling Building Overhead Crane 0HC03G; Revision 0
- NF-AP-622; Fuel Selection and Documentation for Dry Cask Storage; Revision 4
- OP-AA-201-004; Fire Prevention for Hot Work; Revision 9
- PI-CNSTR-T-OP-220; Closure Welding of Holtec Multi-Purpose Canisters at Exelon Facilities; Revision 2
- RP-BY-304-1001; HI-TRAC Radiation Survey; Revision 2
- RP-BY-304-1002; HI-STORM Radiation Survey; Revision 3
- 0BDCSR 3.1.1.1; Multi-Purpose Canister (MPC) Integrity Verification; Revision 1
- 0BDCSR 3.1.3.1; Multi-Purpose Canister (MPC) Cavity Pressure Verification; Revision 1

- 0BDCSR 3.1.4.1; Supplemental Cooling System (SCS) Operability Verification; Revision 3
- 0BDCSR 3.2.2.1; MPC Surface Contamination Verification; Revision 1
- 0BDCSR 3.3.1.1; Wet Cask Pit/MPC Boron Concentration Verification; Revision 1
- Byron Dry Cask Storage Training Matrix, Revision 1
- Byron ISFSI Lessons Learned Readiness Brief; February 10, 2012
- Byron Nuclear Power Station, Units 1 and 2; 10 CFR 72.212 Evaluation Report; Revision 3
- BYR11-197; Fuel Selection Package BYR-0016 for MPC0187; Revision 0
- BYR11-198; Fuel Selection Package BYR-0017 for MPC0186; Revision 0
- BYR11-199; Fuel Selection Package BYR-0018 for MPC0183; Revision 0
- Forced Helium Dehydration System [Training], Revision 00
- Fuel Move Sheet Package 2012 Dry Cask – MPC0187; February 27, 2012
- Holtec Letter to Byron; FHD Dew Point Operability; March 22, 2012
- Holtec Report No. HI-2084113; Dose versus Distance from a HI-STORM 100S Version B Containing the MPC-32 for Byron/Braidwood; Revision 7
- One Month Readiness Review, Byron Nuclear Station Dry Cask Storage 2012 Campaign; February 6, 2012
- IR 01319213; Unclear Scope of Site Reactor Engineering Review for Fuel Selection Packages; January 28, 2012
- IR 01319283; Dry Cask Storage Project Review for Process Alignment; January 28, 2012
- IR 01324010; HI-TRAC Trunnions Bound in HI-TRAC; February 7, 2012
- IR 01334080; Fuel Handling Building Crane 0HC03G Scoreboard Weight Readout; February 29, 2012
- IR 01337745; Dry Cask Storage – Review of Holtec Information Bulletin 54 FHD Wiring; March 7, 2012
- IR 01339936; DCS – MPC Number 187 Discovered to be Oblong; March 12, 2012
- IR 01342065; NRC Dry Cask Storage Results; March 16, 2012
- IR 01344618; Helium Supply Flow to FHD Skid Blocked; March 23, 2012
- IR 01345214; DCS Surveillance Change Needed for 0BDCSR 3.1.4.1; March 24, 2012
- IR 01349932; NRC ID'D – DCS – Critique of Welding Operations; April 4, 2012
- IR 01350170; Dry Cask Process Recommendation – MPC Blowdown Phase; April 4, 2012
- IR 01350552; Procedure Documentation Incomplete; April 5, 2012
- IR 01350663; Procedure Revision Required – 0BDCSR 3.1.1.1; April 5, 2012
- IR 01350712; Vendor Welding Procedure Revision Requested; April 5, 2012
- IR 01350933; NRC Identified Bags of DAW Not Stored in Covered Carts; April 6, 2012
- WO 01322216; Fuel Handling Building Overhead Bridge Crane Electrical Inspection; June 30, 2011
- WO 01323391, Fuel Handling Building Crane Mechanical Inspection; June 8, 2011
- WO 01437840; MPC Lift Cleat Inspection; February 8, 2012
- WO 01438159; Lift Yoke Inspection; February 6, 2012
- WO 01500091; Mechanical [Fuel Handling Building] Crane Inspection; January 18, 2012
- 72.48-032; Wet Cask Pit/MPC Boron Concentration Verification; September 14, 2011
- 72.48-033; MPC Surface Contamination Verification; September 14, 2011
- 72.48-038; Mating Device Modification; December 15, 2011
- 72.48-039; OU-AA-630; December 30, 2011
- 72.48-045; 72.212 Evaluation Changes for FSAR Revision 9 and CoC Amendment 7

LIST OF ACRONYMNS USED

ADAMS	Agencywide Document Access and Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
ANS	Alert and Notification System
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
CS	Containment Spray
DEP	Drill and Exercise Performance
EP	Emergency Preparedness
ERO	Emergency Response Organization
FSAR	Final Safety Analysis Report
HELB	High Energy Line Break
HI-STORM	Storage Cask
HI-TRAC	Transfer Cask
IMC	Inspection Manual Chapter
I/O	Input/Output
IP	Inspection Procedure
IR	Inspection Report
IR	Issue Report
ISFSI	Independent Spent Fuel Storage Installation
IST	Inservice Testing
LER	Licensee Event Report
MCID	Materials Control, ISFSI, and Decommissioning
MPC	Multi-Purpose Canister
NCV	Non-Cited Violation
NEi	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
PI	Performance Indicator
RCFC	Reactor Containment Fan Cooler
RCS	Reactor Coolant System
RH	Residual Heat Removal
RP	Radiation Protection
SDP	Significance Determination Process
SER	Safety Evaluation Report
SSC	Structure, System, and Component
SX	Essential Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WO	Work Order

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 (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Eric R. Duncan, Chief
Branch 3
Division of Reactor Projects

Docket Nos. 50-454; 50-455; and 07200068
License Nos. NPF-37 and NPF-66

Enclosure: Inspection Report No. 05000454/2012003 and 05000455/2012003; 07200068/2012001
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Letter to M. Pacilio from E. Duncan dated August 7, 2012.

SUBJECT: BYRON STATION, UNITS 1 AND 2, NRC INTEGRATED INSPECTION REPORT 05000454/2012003; 05000455/2012003; 07200068/2012001

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