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

May 5, 2010

Mr. Charles G. Pardee
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO), Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BYRON STATION, UNITS 1 AND 2, INTEGRATED INSPECTION REPORT 05000454/2010-002; 05000455/2010-002

Dear Mr. Pardee:

On March 31, 2010, 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 that were discussed on April 9, 2010, with Mr. D. Enright and other members of your staff.

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

Based on the results of this inspection, one NRC-identified finding of very low safety significance was identified. The finding involved a violation of NRC requirements. However, because of its very low safety significance, and because the issue was entered into your corrective action program, the NRC is treating the issue as a non-cited violation (NCV) in accordance with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of the 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. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Byron Station. The information that you provide will be considered in accordance with Inspection Manual Chapter 0305.

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

Sincerely,

/RA/

Richard A. Skokowski, Chief
Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000454/2010-002 and 05000455/2010-002
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-454; 50-455
License Nos:	NPF-37; NPF-66
Report Nos:	05000454/2010002 and 05000455/2010002
Licensee:	Exelon Generation Company, LLC
Facility:	Byron Station, Units 1 and 2
Location:	Byron, IL
Dates:	January 01, 2010, through March 31, 2010
Inspectors:	B. Bartlett, Senior Resident Inspector J. Robbins, Resident Inspector R. Ng, Project Engineer C. Thompson, Resident Inspector, Illinois Department of Emergency Management
Approved by:	R. Skokowski, Chief Branch 3 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000454/2010-002, 05000454/2010-002; January 01, 2010 – March 31, 2010; Byron Station, Units 1 & 2; Fire Protection

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspector. One Green finding was identified by the inspectors. The finding was considered a Non-Cited Violation (NCV) 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). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. The inspectors identified a finding of very low safety significance and associated NCV of the Byron Unit 1 Operating License (OL), Condition 2.C.(6) for failure to comply with the fire barrier sealing requirements of the Fire Protection Program (FPP). Specifically, a temporary rigging support used during initial construction was left in place and unsealed through a wall separating the Unit 1 Train A Auxiliary Feedwater (AF) pump room from the Unit 1 Train B AF pump room. The licensee entered the issue into the corrective action program (CAP) and sealed the fire barrier penetration.

  This finding is more than minor because it was associated with the external factor attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding is of very low safety significance because there was not a significant degradation of the gaseous suppression system and the fire barrier degradation was also screened to Green due to the lack of a credible fire damage state (FDS) 3 scenario. This finding does not have a cross-cutting aspect due to its age. (Section 1R05.1.b)

B. License-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at full power through most of the inspection period.

Unit 2 operated at full power through most of the inspection period.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness of Offsite and Alternate AC Power Systems

a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternate alternating current (AC) power systems during adverse weather were appropriate. The inspectors reviewed the licensee's procedures affecting these areas and the communications protocols between the transmission system operator (TSO) and the plant to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. Examples of aspects considered in the inspectors' review included:

- The coordination between the TSO and the plant during off-normal or emergency events;
- The explanations for the events;
- The estimates of when the offsite power system would be returned to a normal state; and
- The notifications from the TSO to the plant when the offsite power system was returned to normal.

The inspectors also verified that plant procedures addressed measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system prior to or during adverse weather conditions. Specifically, the inspectors verified that the procedures addressed the following:

- The actions to be taken when notified by the TSO that the post-trip voltage of the offsite power system at the plant would not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply;
- The compensatory actions identified to be performed if it would not be possible to predict the post-trip voltage at the plant for the current grid conditions;
- A re-assessment of plant risk based on maintenance activities which could affect grid reliability, or the ability of the transmission system to provide offsite power; and
- The communications between the plant and the TSO when changes at the plant could impact the transmission system, or when the capability of the transmission system to provide adequate offsite power was challenged.

Documents reviewed are listed in the Attachment to this report. The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures.

This inspection constituted one readiness of offsite and alternate AC power systems sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings of significance 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 Auxiliary Feedwater (AF) while Unit 1 Train B AF was out-of-service for Maintenance;
- Unit 2 Train B Emergency Diesel Generator (EDG) while Unit 2 Train A EDG was out-of-service for Maintenance; and
- Unit 1 Train A Reactor Containment Fan Coolers while Unit 1 Train B Reactor Containment Fan Coolers were inoperable.

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 CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Fire Zone 11.4A-1, Unit 1 Train B AF Pump Room;
- Fire Zone 11.4-0, Auxiliary Building Floor 383;
- Fire Zone 11.4A-2, Unit 2 Train B AF Pump Room;
- Fire Zone 11.4C-0, Radioactive Waste Control Room and Remote Shutdown Panels; and
- Fire Zone 11.4A-0, Main Control Room Chillers.

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

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

b. Findings

(1) Fire Barrier with Unsealed Penetration between Unit 1 Auxiliary Feedwater Pump Rooms

Introduction: The inspectors identified a finding of very low safety significance and associated Non-Cited Violation (NCV) of the Byron Unit 1 Operating License (OL), Condition 2.C.(6) for failure to comply with the fire barrier sealing requirements of the Fire Protection Program (FPP). Specifically, a temporary rigging support used during initial construction was left in place and unsealed through a wall separating the Unit 1 Train A AF pump room from the Unit 1 Train B AF pump room. The licensee entered the issue into the CAP and sealed the fire barrier penetration.

Description: On February 3, 2010, the inspectors performed a fire protection walkdown of the Unit 1 and Unit 2 AF pump rooms (Fire Zones 11.4-0, 11.4A-1 and 11.4A-2). The inspectors observed a pipe penetrating the 3-hour rated firewall between the Unit 1 Train A AF pump room and the Unit 1 Train B AF pump room (between Fire Zones 11.4-0 and 11.4A-1). The open-ended pipe was about 4 inches in diameter but narrowed to a 2-inch diameter opening at the ends. In addition, the pipe was near the ceiling (16 feet up in a room that is 18 feet high) and was mounted between two overhead anchor points.

The inspectors informed the licensee who declared the 3-hour rated fire barrier inoperable and instituted an hourly fire watch. In addition, the licensee verified that the automatic fire detection instrumentation was operable in accordance with the Technical Requirement Manual. The licensee subsequently sealed the open penetration (WO 01307352 dated February 18, 2010). The abandoned rigging support was assigned Seal Number 015103 and added to the licensee's fire barrier inspection program.

A review of construction records by licensee personnel determined that the most likely source of the pipe was its use as a temporary construction lift attachment point and that it subsequently was not removed. The licensee could find no drawings that showed the penetration as required to be installed and the 3-hour rated fire barrier between the unit associated AF pumps was required by the FPP to have all openings sealed.

Analysis: The inspectors determined that the licensee's failure to have all penetrations between the Unit 1 AF pump rooms sealed in accordance with the FPP was a performance deficiency that warranted a IMC 0609, "Significance Determination Process" (SDP) evaluation. The inspectors concluded that the finding was greater than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening." Specifically, it was associated with the external factor attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations.

The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process," because it was associated with fire protection defense-in-depth strategies involving suppression system and the fire barrier system. The inspectors determined that the finding had a low degradation rating for gaseous based suppression (the Unit 1 Train B AF pump room is protected by a total flooding carbon dioxide system) as the hole in the barrier was less than the area of one 5-inch diameter seal. This portion was determined to be Green. The unsealed pipe penetrating the wall resulted in the 3-hour rated fire barrier between Fire Zones 11.4-0 and 11.4A-1 being highly degraded. However, the inspectors determined that a fire on either side of the wall would not result in damage to the redundant AF pump or other redundant safe shutdown equipment on the other side. Because there were no redundant cables or equipment near the unsealed pipe, the inspectors concluded that hot gases, which could penetrate the unsealed pipe, would cool and disperse, such that redundant cables and equipment would not have been damaged, and would have remained available to safely shut down the reactor. Consequently, this portion was also screened to Green due to the lack of a credible fire damage state (FDS) 3 scenario. Therefore, the finding was determined to

be of very low safety significance (Green). Also, due to the age of this finding, it does not have a cross-cutting aspect associated with it.

Enforcement: Byron Unit 1 OL, Condition 2.C.(6) states, in part, that the licensee shall implement and maintain in effect all provisions of the approved FPP as described in the licensee's Fire Protection Report. The Fire Protection Report Section 2.3.11.31, states that for the Unit 1 AF diesel driven pump room (Fire Zone 11.4A-1) "This room is physically separated from the remainder of the plant by 3-hour rated fire barriers." Contrary to the above, from original construction through February 3, 2010, the Unit 1 AF diesel driven pump room was not physically separated from the remainder of the plant by 3-hour rated fire barriers. Specifically, the inspectors identified an open-ended pipe through the 3-hour rated wall that was not sealed and was not rated as a 3-hour fire barrier. Because this violation was of very low safety significance and because it was entered into the licensee's CAP as Issue Report (IR) 1025593, this violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC enforcement policy. (NCV 05000454/2010002-01)

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On March 2, 2010, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and 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 to this report.

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

b. Findings

No findings of significance 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:

- Foreign Material Identified in Upper Cable Spreading Room Halon Actuation Valves; and
- Unit 1 Feedwater Regulating Valve 1FW520 Travel Transducer Due to Flow Perturbations.

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

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

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

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

b. Findings

No findings of significance 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:

- Review of Risk Assessment associated with On-Line Centrifugal Charging Pump Maintenance;
- Risk Profile for Week of January 18, 2010, including Unit 1 Train A Essential Service Water (SX) Pump Cooler Maintenance; and
- Risk Profile for Week of March 29, 2010, including heavy load lifts and containment entry.

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 three samples as defined in IP 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Gas Void in Line Segment 2SI34A-8, Residual Heat Removal to Safety Injection Suction ;
- Unit 2 Train A SX Room Cooler Inoperable while the Pump Would have Automatically Started;
- Unit 2 Primary Containment Chiller not Welded to Supports as Required with a Potential Impact to SX Piping;
- Gas Voids in lines near 1SI8811A and B, Suction Valves from Containment Recirculation Sump; and
- Unit 1 Feedwater Regulating Valve 1FW540 due to Flow Perturbations.

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

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

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- Unit 1 SX Valve 1SX034 Following Breaker Inspections;
- Unit 1 Train A EDG Output Breaker Relay Failure Identified during Surveillance 1BOSR 8.1.12-1; and
- Unit 2 Train B Circulating Water Pump Following Replacement of the Rotating Element.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TS, the 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 to this report.

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

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Risk Management Plan and contingency plans for the Unit 2 refueling outage (RFO), plan to be started April 19, 2010, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. Documents reviewed during the inspection are listed in the Attachment to this report.

This inspection constituted only a partial completion of one RFO sample as defined in IP 71111.20-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following 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 B EDG Monthly Surveillance;
- Unit 2 Train B Solid State Protection System Surveillance;
- Unit 2 Train A Comprehensive Inservice Testing Requirements (IST) Requirements for Essential Service Water Pump 2SX01PA;
- Unit 1 Group A IST for Centrifigual Charging Pump 1CV01PB;
- Unit 1 Train A Component Cooling Water Pump Comprehensive IST Surveillance;
- Unit 2 Group B IST Requirements for Motor Driven Auxiliary Feedwater Pump 2AF01PA;
- Unit 1 Station Air Valve 1SA033 Replacement and Installation of Freeze Seal; and
- Unit 2 Train B Safeguards Actuation Relay Parallel Path Test.

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 activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted four routine surveillance testing samples and four inservice testing samples, as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unit 1 and Unit 2 Unplanned Scrams per 7000 Critical Hours performance indicator (PI) for the period from the April 2009 through February 2010. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Inspection Reports for the period to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two unplanned scrams per 7000 critical hours sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unit 1 and Unit 2 Unplanned Scrams with Complications performance indicator for the period from the April 2009 through February 2010. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for the period to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two unplanned scrams with complications sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.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 occurrences 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 of significance 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 of significance were identified.

.3 Selected Issue Follow-Up Inspection:

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized two corrective action items documenting Unit 1 Train B centrifugal charging pump reduced flow as compared to Train A and question regarding accuracy of the licensee's submittal for TS change regarding SX. The inspectors selected these two CAP items for an in-depth review.

This review constituted two in-depth problem identification and resolution samples as defined in IP 71152-05.

b. Findings

No findings of significance were identified.

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

.1 (Open) Licensee Event Report 05000454/2009-001-01, Drain Procedure for ECCS Suction Line Creates an Unanalyzed Condition Due to Inadequate Configuration Requirements

This event, which occurred on October 28, 2009, discusses an on-line work window in which water was drained from a line without controlling the vent and drain valves used to perform the draining evolution. Documents reviewed as part of this inspection are listed in the attachment. This Licensee Event Report remains open.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 9, 2010, the inspectors presented the inspection results to Mr. D. Enright 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Enright, Site Vice President
B. Adams, Plant Manager
B. Askren, Security Director
D. Gudger, Regulatory Assurance Manager
T. Hulbert, Regulatory assurance NRC Coordinator
P. Johnson, NOS
D. Goldsmith, Operations
S. Kerr, Chemistry Manager
B. Spahr, Maintenance Director
S. Greenlee, Engineering Director
S. Briggs, Performance Improvement Manager
D. Thompson, Radiation Protection Manager
L. Bogue, Training Manager
R. Zuffa, IEMA

Nuclear Regulatory Commission

R. Skokowski, Chief, Branch 3, Division of Reactor Projects, Region III

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000454/2010002-01	NCV	Fire Barrier with Unsealed Penetration Between Unit 1 AF Pump Rooms
05000454/2009-001	LER	Drain Procedure for ECCS Suction Line Creates an Unanalyzed Condition Due to Inadequate Configuration Requirements

Closed

05000454/2010002-01	NCV	Fire Barrier with Unsealed Penetration Between Unit 1 AF Pump Rooms

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

IR 0878037; Oil Leaking from Bus 10 Current Transformer Phase C, February 08, 2009
IR 1040091; Oil Leak on OCB BT 4-5 "B" Phase Bushing, March 08, 2010
OP-AA-108-107-1001; Station Response to Grid Capacity Conditions, Revision 3
OP-AA-108-107-1002; Interface Agreement between Exelon Energy Delivery and Exelon Generation for Switchyard Operations, Revision 4
0B0A ELEC-1; Unit 0 Degraded Switchyard Voltage, Revision 8

Section 1R04: Equipment Alignment (Quarterly)

BOP VP-E1; Unit 1 Primary Containment Ventilation Electrical Lineup, Revision 4

Section 1R05: Fire Protection (Quarterly)

EC Request 393845; Provide Fire Barrier Repair Type and Evaluate if Fire Seal Needs to be Identified in a Fire Seal Schedule, Mechanical or Electrical and Assist with Available Drawings, February 04, 2010
EC Request 393859; Fin Team Has Requested an Alternate Repair Method to Repair Fire Seal Barrier as Indicated. Recommended Material Size, Design Drawing and Detail Installation Instructions, February 05, 2010
Issue 1039107; Potential Emergent Firewatch Issue With Fire-Proofing – NRC, March 05, 2010
Common Cause Analysis Action Tracking item 897386-02; Plant Fire Barriers CCA, May 26, 2009
Drawing - Auxiliary Building Upper Basement Floor Plan El. 383'-0" Area 2, Revision CQ
Drawing – Auxiliary Building El. 383'-0" Zone 11.4-0 North, Pre-Fire Plan, January 31, 2007
Drawing – Auxiliary Building El. 383'-0" Zone 11.4A-1, Pre-Fire Plan, January 31, 2007
Drawing – Auxiliary Building El. 383'-0" Zone 11.4A-2, Pre-Fire Plan, January 31, 2007
Drawing – Auxiliary Building El. 383'-0" Zone 11.4C-0, Pre-Fire Plan, January 31, 2007
WO 1307352; NRC Walkdown Questions Potential Hole in Fire Barrier, February 18, 2010
BAP 1100-10; Response Procedure for Fire, Revision 8
BOP FR-1T6; 11.4-0, 11.4A-1, 11.4A-2 383' Auxiliary Building General Area and 1B/2B AF Pump Rooms 1D-11, 1D-12, 1S-41, 1S-42, 2S-41, 2S-42, 2S-54, Revision 5
BOP FR-1; Fire Response Guidelines, Revision 11
BAR 1PM09J-C16; Unit 1 Diesel Driven Aux Feed Pump Day Tank Room, 383'0" M17, Revision 2
BAR 1PM09J-C15; Unit 1 Diesel Driven Aux Feed Pump, 383'-0" L/M-15/17, Revision 2
BAR 2PM09J-C15; Unit 2 Diesel Drive Aux Feed Pump 383'-0" L/M-19/21, Revision 3

Corrective Action Documents As a Result of NRC Inspection

IR 1028989; NRC Walkdown Questions Potential Air Leak in Fire Barrier Walls, February 11, 2010

IR 1029001; NRC Walkdown Identifies Potential Non-Fire Retardant Wood Form, February11, 2010
IR 1029013; NRC Walkdown Identifies Loose Bolts/Nuts Through Wall-Fire Wall Issue, February 11, 2010
Calculation ATD-0391 Revision 1; Evaluation to Establish Byron CV and SX Pump Cubicle Cooler Electrical Cables are not Required for Safe Shutdown of the Reactor under 10 CFR 50, Appendix R, May 18, 1995

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

IR 1015382; CV Pump On Line Maintenance, January 11, 2010
IR 1018944; Apparent Cause Report; 2A Essential Service Water (SX) Pump
IR 1019706; Byron Prompt Investigation on SX Cubicle Cooler Evaluation, January 22, 2010
WC-AA-101; On-Line Work Control Process, Revision 17
Issue 1016204; 1CV01PB-M Inboard Motor Bearing Lubrication Anomaly, January 13, 2010
CV Pump On-Line Maintenance Presentation, January 11, 2010
Draft Risk Assessment for Week of March 01, 2010
Cubicle Cooler Out of Service with Associated Pump Able to Auto Start, January 19, 2010
1BOSR 5.5.1-1; Unit 1 RCS Seal Injection Flow Verification Monthly Surveillance, Revision 4

Corrective Action Documents As a Result of NRC Inspection

Issue 1046048; NRC Question on IR Leads to Additional Actions Needed, March 17, 2010
IR 1018944; NRC Concern – Post Window Critique Item – SX PP, January 20, 2010

Section 1R15: Operability Evaluations

EC 366163 011; OP Eval 07-005 Unventable Gas Voids in Containment Recirculation Sump Piping, February 02, 2010
EC 371879 008; OP Eval 08-007, Gas Void at 2CS009A, February 02, 2010
EC 378913; Past Operability Evaluation of Gas Void in Line 2SI34A-8, February 18, 2010
EC 378402; Single Use Evaluation for ½ of SX Cube CLR Not Available, January 06, 2010
EC 378660; Evaluation of the Adequacy of the 1A SX Cube Cooler with Running 2 SX Pumps, February 04, 2010
EC 378676; OP Eval 10-001 Gas Void in Line 2SI34A-8", February 02, 2010
Adverse Condition Monitoring and Contingency Plan; 1SI06BA-24" and 1SI106BB-24: Gas Accumulation Monitoring, February 01, 2010
Adverse Condition Monitoring and Contingency Plan; 2SI34A-8" Gas Accumulation Monitoring, February 01, 2010
Adverse Condition Monitoring and Contingency Plan; 1FW540 Flow Swings, February 12, 2010
Equipment Prompt; During the Monthly Performance of 1BOSR 5.2.2-1 (Monthly ECCS Venting), an UT Exam Discovered a Gas Void Approximately 1.8 Cubic-Feet at 1SI8811A, February 03, 2010
Issue 1024407; Gas Void Identified in 1SI06BB-24 Near 1SI8811B, February 01, 2010
Issue 1024530; Gas Void Detected in 1SI06BA-24" Near 1SI8811A, February 01, 2010
Issue 1027941; Need Analysis of Removal of SX Cubicle Fans for Maintenance, February 09, 2010
Issue 1029403; 1D SG FW Flow Perturbation, February 11, 2010
NAI Report Release; Evaluation of Gas Accumulation in Byron Unit 1 ECCS Suction Piping, Revision 2, February 16, 2010
IR 1028964; WO to Inspect/Repair 1FW540 Internals in B1R17, February 11, 2010

IR 981136; Spikes on 1FW540 Flow Loops-Related to Tempering Flow, October 19, 2009
System Health Report; Unit 1 Main Feedwater, October 01, 2009 – December 31, 2009
Apparent Cause Reports; Gas Voids Found in Lines 2SI34AB and 1SI106BA and 1SI06BB, January 26, 2010, and February 01, 2010
Data Report for 1/2VA01SA/SB – SX Cubicle Coolers, February 08, 2010

Corrective Action Documents As a Result of NRC Inspection

Issue 1027538; Failed to Obtain UT Measurements for Unit 1 SI Piping, February 08, 2010

Section 1R19: Post Maintenance Testing (Quarterly)

WO 1108271 02; 1SX034 Thermal OL Surveillance (132X1-B4) U1 PP Discharge XTIE B TRN, March 01, 2010
WO 1271254 02; Butterfly Valve OPR Diagnostic Test, March 01, 2010
WO 330893; ACB 1413 Lock Out Relay Failed During 1BOSR 8.1.12-1
IR 757507; 1SX033; Could Not Provide isolation for 1SX034 Replacement, April 01, 2008

Section 1R20: Refueling and Other Outage Activities (Quarterly)

1BOSR 8.1.2-2; 1B Diesel Generator Operability Surveillance, Revision 25

Section 1R22: Surveillance Testing (Quarterly)

WO 1251403 01; Suspected Leaking By Valve, March 03, 2010
WO 1276582 01; 2AF01PA Group B IST Requirements for Motor Driven AF Pump, January 08, 2010
WO 1283456 01; 1CV01PB Group A IST Requirements for CV Pump, January 28, 2010
WO 1286613 01; 2SX01PA Comprehensive IST Requirements for Essential Service Water Pump, February 11, 2010
1BOSR 5.5.8.CC.5-1c; Unit 1 Comprehensive Inservice Testing (IST) Surveillance Requirements for Component Cooling Pump 1CC01PA, Revision 0
2BOSR 3.2.8-608D; Non-ESFAS Instrumentation Slave Relay Surveillance (Train B Safeguards Actuation Relay (SARB) Parallel Path Test), Revision 4
IR 717641; CV Pump Shaft Performance Monitoring Revisited, January 03, 2008
IR 937411; 2BSSPS General Warning Alarm, K-524 Relay Chattering, June 30, 2009
IR 1022890; Perform General Walkdown of Hangers in the Unit 2 AF Tunnel, January 28, 2010
IR 1281732; Train B Solid State Protection System Surveillance, February 23, 2010
Byron Inservice Testing Bases Document; CC Pump Discharge Check Valve, Category C
System Health Report; Unit 1 and Unit 2 Engineered Safety Features Act. System, October 01, 2009 – December 31, 2009
SX System Health Report; October 01, 2009 – December 31, 2009

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

MA-BY-716-026-1001; Seismic Housekeeping, Revision 1
SA-AA-122; Handling and Storage of Compressed Gas Cylinders/Portable Tanks and Cyrogenic Containers/Dewars, Revision 7
IR 1009401; Plant Wide Page System Fails BOSR, Plant Safety Issue, December 25, 2009
WO 1297102-01; Make Repairs to Areas Identified as Deficient in the Last Performance of Procedure 0BOSR CQ-1, Revision 0

WO 1299197; Inspect Valve Vault 0SX138A for Water and Pump as Needed, March 23, 2010
OBOSR CQ-1; Bi-Monthly Test of the Employee Alarm System, Revision 3
Exelon Nuclear Letter to NRC; Clarification to Response to Request for Additional Information Regarding the One-Time Extension of the Essential Service Water Train Completion Time, dated March 19, 2010
OTDM; Unit 1 CV Letdown System is Providing Excessive Flowrates and is Challenging the Capability of the CV Charging Pumps to Maintain Stable Pressurizer Levels, January 08, 2010

Corrective Action Documents As a Result of NRC Inspection

Issue 1027478; NRC Identified Access Door to 1FE-VD004 Unlatched, February 08, 2010
Issue 1042074; NRC Identified Concern with Exelon's SX001 LAR Request for Additional Information Response, March 10, 2010
Issue 1046950; NRC Identified Missing Handwheel Cover, March 24, 2010
Issue 1048282; Issues Identified with IR Event/Discovery Dates, March 25, 2010
IR 1018290; NRC Identified Question on Spring Can Load, January 19, 2010

Section 4OA5: Other Activities

0BOA ENV-4; Earthquake Unit 0, Revision 104
1BOA ENV-4; Earthquake Unit 1, Revision 100
IR 1028176; Issues with 0BOA ENV-4, February 10, 2010

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
AF	Auxiliary Feedwater
CAP	Corrective Action Program
CFR	Code of Federal Regulations
EDG	Diesel Generator
FDS	Fire Damage State
FPP	Fire Protection Program
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
IST	Inservice Testing
LER	Licensee Event Report
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OL	Operating License
PARS	Publicly Available Records
PI	Performance Indicator
RFO	Refueling Outage
SDP	Significance Determination Process
SX	Essential Service Water
TS	Technical Specification
TSO	Transmission System Operator
UFSAR	Updated Final Safety Analysis Report
WO	Work Order

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Sincerely,

/RA/

Richard A. Skokowski, Chief
Branch 3
Division of Reactor Projects

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

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Letter to C. Pardee from R. Skokowski dated May 5, 2010.

SUBJECT: BYRON STATION, UNITS 1 AND 2, INTEGRATED INSPECTION REPORT 05000454/2010-002; 05000455/2010-002

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