



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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October 15, 2009

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, UNIT 1 & 2 NRC PROBLEM IDENTIFICATION AND
RESOLUTION INSPECTION REPORT 05000454/2009008; 0500455/2009008**

Dear Mr. Pardee:

On September 1, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Byron Station. The enclosed inspection report documents the inspection results, which were discussed on September 1, 2009, with Mr. B. Adams 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.

On the basis of the samples selected for review, the team concluded that in general, problems were properly identified, evaluated, and corrected. There was one NRC-identified finding of very low safety significance associated with untimely corrective action to restore fire protection equipment obstruction. The finding was determined to be 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.

In addition, several examples of minor problems were identified, including untimely condition report evaluations, and corrective actions that were ineffectively tracked or had not occurred.

If you contest the subject or severity of a Non-Cited Violation, 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 Byron Station. The information 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, 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 the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

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. 05000454/2009008 and 05000455/2009008
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: 05000454/2009008 and 05000455/2009008

Licensee: Exelon Generation Company, LLC

Facility: Byron Station, Units 1 and 2

Location: Byron, IL

Dates: August 10, 2009, through September 1, 2009

Team Leader: R. Ng, Project Engineer

Inspectors: J. Robbins, Resident Inspector
G. O'Dwyer, Reactor Inspector
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Management Agency

Approved by: R. Skokowski, Chief
Branch 3
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000454/2009008; 05000455/2009008; 08/10/2009 - 08/28/2009; Byron Station, Units 1 and 2; Identification and Resolution of Problems.

This inspection was conducted with region-based inspectors, the NRC Resident Inspector at the Byron Station and the onsite Illinois Emergency Management Agency (IEMA) inspector. 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.

Identification and Resolution of Problems

The inspectors concluded that the licensee's corrective action program (CAP) in general was effective in identifying, evaluating and correcting issues at the site. The licensee had a low threshold for identifying issues and entering them into the CAP. Overall, the issues were properly prioritized and evaluated based on plant risk and uncertainty. Corrective actions, when specified, were generally implemented in a timely manner, commensurate with their safety consequences. The use of operating experience was found to be effective and was integrated into daily activities. In addition, the licensee's self-assessments, audits and effectiveness reviews were thorough and effective in identifying site performance deficiencies, programmatic concerns and improvement opportunities. On the basis of the interviews conducted, site personnel were free to raise safety concerns through the established processes.

There was one Green Non-cited Violation (NCV) identified by the team during this inspection. The finding was related to the licensee's failure to perform timely corrective actions for a previously identified violation.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- **Green:** The inspectors identified a Green NCV of Byron License Condition 2.C.(6) for Unit 1 for failure to take timely corrective actions as described in the Fire Protection Program to address a previously issued NCV regarding sprinkler obstruction by scaffolding in the 1A diesel oil storage tank room. Specifically, the licensee did not fully evaluate the issue before reinstalling a different type of scaffold planks. After the licensee concluded the plank was not acceptable, there was no full extend of condition walkdown until 5 months later and no modification to the scaffold until the inspectors identified the condition in August 2009. The initial violation was originally identified by NRC inspectors in April 2008.

This finding is more than minor because it was associated with the external factor attribute of the Initiating Events (IE) 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 it has a low degradation rating as only one out of 11 sprinklers in the room was obstructed and there was another functional

head within 10 feet of the combustible concern. This finding has a cross-cutting aspect in the area of Human Performance for Resources (H.2(a)) because the licensee failed to minimize long standing equipment issue. The licensee immediately removed the scaffold obstruction and entered this issue into the CAP as Issue Report (IR) 953448. (Section 4OA2.3)

B. Licensee-Identified Violations

None.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution (71152B)

This inspection constitutes one biennial sample of problem identification and resolution as defined by Inspection Procedure 71152. Documents reviewed were listed at the Attachment to this report.

.1 Assessment of the Corrective Action Program (CAP) Effectiveness

a. Inspection Scope

The inspectors reviewed the procedures and processes that describe Exelon's CAP at Byron Station to ensure, in part, that the station had an adequate program for meeting 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action", requirements. The inspectors observed and evaluated the effectiveness of CAP meetings such as Station Ownership Committee and Management Review Committee (MRC). Selected licensee personnel were interviewed to determine their understanding and their involvement of the CAP.

The inspectors reviewed selected issue reports across all seven cornerstones of safety to determine if problems were being properly identified and entered into the CAP. The majority of the risk-informed sample of IRs was issued since the last NRC biennial Problem Identification and Resolution (PI&R) inspection conducted in July of 2007. The inspectors also reviewed selected issues that were more than 5 years old.

The inspectors assessed the licensee's characterization and evaluation of the issues and examined the assigned corrective actions. This review encompassed the full range of safety significances and evaluation classes such as root cause evaluations, apparent cause evaluations, and workgroup evaluations. The inspectors assessed the scope and depth of the licensee's evaluations. For significant conditions adverse to quality, the inspectors evaluated the licensee's corrective actions to prevent recurrence and for lower safety significance issue, the inspectors reviewed the corrective actions to determine if they were implemented in a timely manner commensurate with their safety significance.

The inspectors selected the instrument air system (IA) to review in detail since IA was a non-safety related system that was risk significant. The review was to determine whether the licensee was properly monitoring and evaluating the performance of this system through effective implementation of station monitoring programs. The inspectors interviewed the system engineer of the applicable system, reviewed numerous issue reports, and reviewed root cause evaluations. A 5-year review of instrument air issues was undertaken to assess the licensee's efforts in monitoring for system degradation due to aging aspects.

The inspectors reviewed the licensee's CAP trend analysis and independently performed a five-year review of the human performance trend and Maintenance Rule (a)(1) system action plans to determine if issues were tracked to identify adverse trend or repetitive issues.

The inspectors examined the results of the two self-assessments of the CAP completed during the review period. The results of the audits were compared to the self-revealed and NRC identified findings. The inspectors also reviewed the corrective actions associated with previously identified NCVs and findings to determine whether the station properly evaluated and resolved those issues. The inspectors performed walkdowns to verify the resolution of the issues.

The inspectors conducted a targeted review to evaluate the completion and effectiveness of the station's corrective actions taken to address weaknesses identified during the 2009 NRC 95001 supplemental inspection involving a White violation related to degraded essential service water riser piping.

b. Assessment

(1) Identification of Issues

The inspectors concluded that, in general, the station continued to identify issues at a low threshold by entering them into the CAP. The inspectors determined that the station was appropriately screening issues from both NRC and industry operating experience (OE) at an appropriate level and entering them into the CAP when applicable to the station. The inspectors also noted that deficiencies were identified by external organizations (including the NRC) that had not been previously identified by licensee personnel.

The inspectors determined that the station was generally effective at trending low level issues to prevent larger issues from developing. The licensee also used the CAP to document instances where previous corrective actions were ineffective or were inappropriately closed.

Observations:

Human Performance Related Trend

Overall, the sites performance continues to trend in a positive direction. The stations composite error rate trend data for errors per 10,000 hours worked continued to move toward the sites established goal of four. The 6 month rolling average error rate has been reduced from about 5.5 errors per 10,000 hours in July 2008 to about 4.5 errors per 10,000 hours in August 2009. The positive performance trend of the operations, maintenance, and engineering departments are all contributing to the overall site performance improvement.

One of the programs that the licensee used to measure/indicate plant performance is the Station Event-Free Clock Program. This program provides an indicator that is a reflection of human performance at the site. Specifically, a clock reset is assessed when an issue is determined to be associated with inadequate human performance [example: failure to write an issue report when required] or inadequate technical human performance [example: work product deficiencies from engineering]. Therefore, a low number of clock resets is indicative of a site with human performance levels in excess of the standard. Although the site did revise the implementing procedure for the Station Event-Free Clock Program during the month of August 2008, the procedural changes do

not appear to have altered the program performance since there were approximately the same numbers of resets during the last 5 months as in the previous 7 months.

Station Event-Free Clock resets are cumulative and are counted over the calendar year. In 2004, the station had 144 departmental clock resets. The number decreased over the years to 57 departmental clock resets in 2007. In 2008, the number increased slightly to 68. As of July of 2009, there were 16 departmental clock resets.

Configuration Control is another measure used by the site to measure/indicate plant performance. This term refers to a site's ability to manage equipment manipulations in such a way that the state of a given piece of equipment can be known by the record of its last manipulation. During the calendar year 2008 the operation department was responsible for 12 configuration control events; equipment was discovered in a state/alignment that was not in agreement with its expected state/alignment. As of July 2009, there have been three configuration control events attributed to operations. During the calendar year 2008, the maintenance department was responsible for 6 configuration control events. As of July 2009, there have been no configuration control events attributed to the conduct of maintenance.

One of the programs the engineering department uses to measure/indicate plant performance is System Health Monitoring program. This indicator is a reflection of the sites ability to effectively maintain plant equipment; to detect and correct changes in equipment reliability or degrading material conditions. System Health ratings are: Excellent (Green), Acceptable (White), Marginal (Yellow), and Unacceptable (Red). During the third quarter of calendar year 2008, nine systems were rated marginal or unacceptable. Specifically, seven systems were rated as Red and two systems were rated as Yellow. As of July 2009, there is one system that is rated Red and no systems that are rated Yellow.

Potential Failure of all the Emergency Diesel Generators (EDG) for Both Units 1 and 2 during a Loss of Offsite Power Event

Introduction: The inspectors identified an unresolved item regarding the EDG Jacket Water (JW) thermostatic 5043 control valves (5043 valves).

Description: As part of the review of the root cause evaluation for the partial loss of instrument air for both units that occurred August 18, 2007, the inspectors reviewed piping and instrumentation diagrams (P&IDs) to identify equipment that would fail to operate after a loss of instrument air. The inspectors identified that a loss of offsite power would cause a loss of instrument air and would cause the EDG JW thermostatic control valve 5043 valve on each EDG to fail open. The EDG Jacket Water Cooling System is a closed system and is cooled by the Essential Service Water System (SX) through the JW heat exchanger (HX). The system keeps engine warm to promote rapid starts in standby and removes heat from engine during EDG operation.

After a design basis accident, the EDGs might be operated in unloaded condition for short periods of time during swapping of loads or starting and stopping of EDGs. As a result the system would not be able to control the amount of JW going to the JW HX with a loss of instrument air. The Updated Final Safety Analysis Report stated that the SX system temperature was designed to range from 40 to 100 degrees Fahrenheit. The inspectors were concerned that during low SX temperature periods (e.g. winter months),

these failed open valves might allow excessive cooling to the JW system of EDG and adversely affect the operability of the EDGs and the ability to perform the required safety functions. The licensee initiated IR 958882 to document this NRC concern and perform a thorough evaluation to demonstrate that the EDGs will adequately perform the required safety functions.

In addition, Section 6 of the licensee's 10 CFR 50.59 Safety Evaluation 6G-98-0275 for a previously replaced 5053 valve controller stated that "Failure of the original or replacement controller may affect the quick start of the diesel as the engine is not pre-warmed." The licensee stated that the evaluation required by the IR would demonstrate that the statement in the Safety Evaluation was not applicable.

Pending the licensee's submittal of the evaluation and calculation to the NRC for review to resolve this issue, this item will be tracked as an unresolved item (URI 05000454/2009008-01; URI 05000455/2009008-01).

(2) Prioritization and Evaluation of Issues

The inspectors concluded that the station was generally effective at prioritizing and evaluating issues commensurate with the safety significance of the identified problem. The inspectors determined that the MRC CAP review meeting was generally thorough and maintained a high standard for approving action. However, low safety significance issues only required supervisor approval for evaluation extension. The inspectors identified that a number of procedure related evaluations were granted extensions without reason for extension documented. Specifically:

- IR 727830 identified in January 2008 that the statement in Procedure BOA ELECT-2, Loss of AC Power, related to auto-makeup of the Volume Control Tank might not be accurate. Engineering was assigned to evaluate this issue but the due date was now extended to December 2009.
- IR 739569 identified in February 2008 that the simplified drawing in Procedure 0BOA SEC-4, Loss of Instrument Air was not accurate. However, the procedure was not revised until June 2009.

The inspectors determined that these issues were minor because operators had other means to obtain the needed information. The licensee entered this issue into the CAP as IR 968120.

The inspectors determined that the licensee was generally effective at evaluating equipment functionality requirements after a degraded or non-conforming issue was identified. The inspectors reviewed Maintenance Rule action plans and issue reports associated with systems returning to (a)(1) again after the licensee had successfully completed the (a)(1) action plans and had previously returned the systems to (a)(2) within the last 5 years. The inspectors determined that issues were tracked to identify adverse trends and actions assigned to correct repetitive issues when applicable.

Observation:

Auxiliary Feedwater Pump Gearbox Vibration

On April 28, 2008, the licensee performed its first In-Service Test under full flow condition on the Unit 1 Train B Auxiliary Feedwater Pump. A change in test conditions was necessitated by a recent change in ASME code. Most of the data collected during this test were used by the licensee in their in-service testing and trending programs to identify changes in pump performance over time. In addition to the ASME required data points, the licensee also collected additional data that were used to evaluate the preventative maintenance program. In this instance, the extra vibration data points were recorded for the gearbox that is located between the diesel and the pump. Some of the data points recorded were higher than their expected range; each of these points measured horizontal acceleration. Since these data points were not part of the required ASME data evaluation requirements, the pump passed the surveillance. The data was passed to the appropriate system engineer to determine the cause and impact of these high vibrations.

Since this test was being conducted under different conditions, the system engineer needed to determine if this behavior was expected for the new test conditions. There was also a possibility that there was an issue with the data collection equipment that was affecting the horizontal measurement data. Decisions were made to collect data from the Unit 2 Auxiliary Feedwater Pump during its full flow test, to collect information from a site with similar equipment and to collect a second set of data from the Unit 1 Auxiliary Feedwater Pump. The results of the data collection allowed the licensee to determine that the recorded vibrations were not expected to occur as a result of the new test conditions. Unfortunately, three quarters passed while this data was being collected.

In March of 2009, the licensee contacted the vendor and requested support to diagnose and correct the problem. Testing identified the cause of the high vibrations as a combination of alignment issues and a resonance condition that existed between the gearbox and the pump running frequency. Adjustments to the alignment of the gearbox and pump were made. A temporary modification was installed to address the resonance issue. A successful full flow test was run after these changes had been implemented.

A past operability determination was made by the licensee to assess the impact of the high vibrations on the equipment under licensing bases conditions. The licensee determined that the pump would have performed as designed upon demand. The licensee acknowledged that the data collection and the past operability determination could have been performed in a more expeditiously manner to validate the operability of this risk significance system.

(3) Effectiveness of Corrective Action

The inspectors concluded that corrective actions for identified deficiencies were generally timely and adequately implemented, commensurate with their safety significance. Problems identified using a root or apparent cause methodologies were resolved in accordance with program and NRC requirements. The inspectors also concluded that sampled corrective actions assignments for selected NRC documented violations were generally effective and timely. However the inspectors did notice a number of untimely corrective actions as described below.

The inspectors determined that the station's corrective actions designed to prevent recurrence (CAPRs) were generally comprehensive, thorough, and timely. The inspectors did notice two CAPRs were in the order of 1500 days old. Specifically, the CAPRs to modify the non-safety related turbine driven feedwater pumps had not been completed since they were assigned in 2004. This modification would resolve an oil pressure problem that caused a reactor trip in 2004. The delay was due to scope change and subsequent cancellation of the scope change. The inspectors determined that this issue was minor since the issue would only potentially cause a reactor trip and the licensee had not experienced the same oil pressure issue since 2004.

The inspectors assessed selected effectiveness reviews for the root cause evaluation to address the SX piping degradation that resulted in a WHITE violation. The inspectors determined that corrective actions were properly implemented and the licensee is addressing external piping corrosion at the plant.

Observations:

a. Instrument Air System had Untimely Corrective Actions for Excessive Moisture Intrusions

The inspectors performed a review of the high number of issue reports associated with the Instrument Air System (IA). The majority of these IRs were initiated by operations personnel since July 2004. These IRs documented that there were inadequate number of drains in the IA and Service Air System (SA) headers and that there were accumulation of excessive water in the header piping for the IA and SA systems. The IRs also documented the burden on operators to repeatedly drain all the IA and SA headers of excessive water up to three times a day and that drain valves were becoming plugged sometimes, allowing no water to drain until repaired. Note that, the SA system supplies air to the IA system through the IA dryers at Byron Station.

The corrective actions were primarily to increase operator blowdowns and repair the plugged drain valves. IR 464402 was initiated in March 2006 to document excessive moisture in the SA system. One of the corrective actions was to modify the system to add more drains to the IA/SA headers. This was the same corrective actions that engineering personnel had previously recommended. However, the modification was rejected by the Plant Health Committee on April 12, 2006.

On August 18, 2007, both units experienced a partial loss of instrument air. Alarms were received in the main control room for low Net Positive Suction Head (NPSH) for all the Main Feedwater Pumps for both Units 1 and 2. Also the standby Condensate and Condensate Booster Pumps automatically started due to the low NPSH. Main Control

Room instruments indicated that the IA header fell to as low as 80 psig and this almost tripped both units offline. The cause of the partial loss of instrument air was determined to be moisture intrusion from the SA system that plugged the IA dryers.

One of the licensee's corrective actions for this event was to install drain traps for five drain valves in the IA system and three drain valves in the SA system. These corrective actions are untimely in that the licensee had not adequately implemented these actions as of the end of the inspection period. The due date for these actions has been extended from December 2008 to April 2010. The failure to adequately implement these actions has resulted in shiftily blowdown of the low point drains to keep the IA system operational. Nonetheless, these shiftily actions were properly classified as an Operator Challenge (OC 298) in accordance with the licensee's Operators Workaround Program on March 30, 2008. The OC 298 document stated that, "This issue impacts operators extensively by requiring excessive time spent on rounds to blow down drops [drain valves]."

The inspectors assessed the above mentioned instrument air problems as captured in the licensee's corrective action program, and determined that there were no incidences severe enough to challenge plant safety systems. Therefore, the issue was not a significant condition adverse to quality and no violations of NRC requirements occurred.

In addition, the inspectors reviewed the licensee's OE evaluation of NRC Information Notice 2008-06 related to loss of instrument air due to failure of a soldered connection. The licensee had established structural integrity acceptable criteria for solder joints to protect them from catastrophic failure. However, a detailed inspection plan had not been developed. Because there were no failure of the IA solder joint at Byron Station since the completion of the evaluation, the licensee's decision not to timely implement actions from the OE evaluations is only a weakness and not a violation of NRC requirements.

b. Untimely Corrective Actions for Sprinkler Obstruction in the 1A DOST Room

Introduction: The inspectors identified a Green NCV of Byron Operating License Condition 2.C.(6) for Unit 1 for failure to take timely corrective actions as described in the Fire Protection Program to address a previously issued NCV regarding sprinkler obstruction by scaffolding in the 1A diesel oil storage tank room (DOST).

Descriptions: NCV 05000454/2008003-01 was issued for the failure to comply with the spacing standard for sprinkler system of the Fire Protection Program. Specifically in April 2008, NRC inspectors identified that the licensee had installed a permanent scaffold with solid decking material underneath a fire suppression sprinkler and next to a working platform. This permanent scaffold, B-4855, in conjunction with the working platform, obstructed a major portion of the spray pattern of one of the foam based fire suppression sprinklers to a portion of the floor area in the 1A DOST room. The licensee entered this issue into their CAP as IR 770364 and removed the planks subsequently.

Since the scaffold was needed to refill the diesel generator fuel oil tank from time to time, a mechanical maintenance supervisor wrote IR 779116 to investigate options. Maintenance planning was assigned to work with the fire protection engineer and operations to evaluate the options. They concluded that grating planks would meet the fire protections requirements and installed the gratings on June 11, 2008. However, the scaffold tracking log was not updated to reflect the installation of the grating as required

by Procedure MA-AA-716-025, "Scaffold Installation, Modification, and Removal Request Process," Revision 5. During the IR review at that time, the MRC assessed the assigned actions and resolution and had no comments. Also at the time, Engineering had no formal documented position regarding the use of grating as a substitute and was in discussion with the NRC on the applicability of spacing requirement. The licensee was working to change the corporate procedure to allow the use of grating.

During the scaffold walk down for the Byron Unit 2 refueling outage in August 2008, the fire marshal identified that there were numerous scaffoldings in the turbine building built in sprinkled area. However, the auxiliary building was not walked down at that time.

On August 6, 2008, the site fire protection program engineer wrote IR 804282 and recommended that the foam system for the 1A DOST room be considered operable with the solid scaffolding deck in place. After further discussion with the NRC, in November 5, 2008, the licensee determined that the spacing requirement was applicable to the station. On December 5, 2008, the licensee determined that the use of grating for plank materials was not acceptable and the corporate procedure would not be revised to allow for grating use.

On April 29, 2009, the licensee completed an extent of condition walkdown of the site to identify all the impair sprinkler locations. Fire protection impairment permits were issued to ensure compensatory actions were in place for the impaired sprinklers. However, the licensee did not walk down the 1A DOST during this evolution.

On August 11, 2009, the inspectors walked down 1A DOST room as part of the NCV corrective action reviewed and identified that grating planks were installed on the Permanent Scaffolding B-4855, which again obstructed the sprinkler coverage area. The inspectors questioned the licensee about this scaffolding and discovered that the licensee did not recognize that Permanent Scaffolding B-4855 was in operational status because the tracking log was incorrect. The inspectors also noted that although a plan to modify the scaffoldings was initiated in May 2009, the work was not scheduled to complete until after the refueling outage in the September 2009.

The licensee immediately removed the grating planks and entered this issue into the CAP as IR 953448.

Analysis: The inspectors determined that the licensee's failure to promptly correct the sprinkler obstructions was a performance deficiency that warranted a significance determination. The inspector concluded that the issue 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. The inspectors determined that the finding related to the 1A DOST room had a low degradation rating since only 1 out of 11 sprinklers in the room was obstructed and there was another functional head within ten feet of the

combustible concern. In addition, other aspects of the system complied with NFPA code. The inspectors determined that the obstructions for the other areas, such as those in the turbine building, had no impact to safety shutdown analysis and screened as minor violations. Therefore the finding was determined to be of very low safety significance (Green).

This finding has a cross-cutting aspect in the area of Human Performance for Resource (H.2(a)) because the licensee failed to minimize long term equipment issue by not correcting fire protection equipment deficiencies in a timely manner.

Enforcement: Byron Unit 1 Operating License, Condition 2.C.(6) states, in part, that the licensee shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in the licensee's Fire Protection Report. Section 3.4.h of the Fire Protection Report states that measures should be established to ensure that conditions adverse to fire protection are promptly identified, reported and corrected. Contrary to the above, sprinkler obstructions, such as by Permanent Scaffold B-4855 in the 1A DOST room, were not promptly identified, and corrected after the licensee determined that grating plank was not acceptable per the NFPA 13 code in December 2008. Because this violation was of very low safety significance and because it was entered into the licensee's CAP, this violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC enforcement policy. (NCV 05000454/2009008-02)

.2 Assessment of the Use of Operating Experience

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the facility's OE program. Specifically, the inspectors reviewed implementing OE program procedures, completed evaluations of OE issues and events, and selected 2007, 2008 and 2009 monthly assessments of the OE composite performance indicators. The inspectors also attended CAP meetings to observe the use of OE information. The inspectors' review was to determine whether the licensee was effectively integrating OE experience into the performance of daily activities, whether evaluations of issues were proper and conducted by qualified personnel, whether the licensee's program was sufficient to prevent future occurrences of previous industry events, and whether the licensee effectively used the information in developing departmental assessments and facility audits. The inspectors also assessed if corrective actions, as a result of OE experience, were effective and timely implemented.

b. Assessment

The inspectors concluded that the station appropriately considered industry and NRC OE information for applicability, and used the information for corrective and preventative actions to identify and prevent similar issues. The inspectors assessed that OE was appropriately applied and lessons learned were communicated and incorporated into plant operations. In particular, OE information was discussed during Plan of the Day meetings and also incorporated into the work management process as part of the pre-job briefs. The inspectors also observed that Exelon fleet internal OE and industry OE were discussed by licensee staff to support review activities and CAP investigations.

Findings

No findings of significance were identified.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed selected focused area self-assessments (FASA), check-in self-assessments, root cause effectiveness reviews, and Nuclear Oversight (NOS) audits. The inspectors evaluated whether these audits and self-assessments were being effectively managed, were adequately covering the subject areas, and were properly capturing identified issues in the CAP. In addition, the inspectors also interviewed licensee personnel regarding the implementation of the audit and self-assessment programs.

b. Assessment

The inspectors concluded that self-assessments and audits were typically accurate, thorough, and effective at identifying issues and enhancement opportunities at an appropriate threshold level. The inspectors concluded that these audits and self-assessments were completed by personnel knowledgeable in the subject area. In many cases, these self-assessments and audits had identified numerous issues that were not previously recognized by the station. For example, NOS has identified that there was no CAPR for one of the root causes for the SX piping degradation root cause report. It was because another CAPR from the same report addressed this cause; however, it was not documented as such. Therefore, no violations of NRC requirements occurred. However, since the root cause report was reviewed by numerous licensee's technical and management staff, this oversight was particularly weak.

Findings

No findings of significance were identified.

.4 Assessment of Safety Conscious Work Environment (SCWE)

a. Inspection Scope

The inspectors interviewed selected members of the Byron Station personnel to determine if there were any impediments of a SCWE. In addition, the inspectors discussed the implementation of the Employee Concerns Program (ECP) with the ECP coordinators, and reviewed 2007 - 2009 ECP activities to identify any emergent issues or potential trends. In addition, the inspectors assessed the licensee's SCWE through the reviews of the facility's ECP implementing procedures, discussions with coordinators of the ECP, interviews with personnel from various departments, and reviews of IRs. The licensee's programs to publicize the CAP and ECP programs were also reviewed.

b. Assessment

The inspectors determined that the conditions at the Byron Station were conducive to identifying issues. The staff was aware of and generally familiar with the CAP and other

station processes, including the ECP, through which concerns could be raised. A number of craft personnel indicated that they did not personally enter issues into the CAP. Instead, their preferred method was to notify supervisors of the issues and had the supervisors enter the issues into the CAP. The inspectors determined that this observation was not a significant concern since the personnel interviewed stated that they were willing to voice issues to their management and/or ask another employee to write the IR for them. Several employees mentioned that they would like face to face feedback after writing IRs and that many IRs were closed to trending. All employees interviewed noted that any safety issue could be freely communicated to supervision and safety significance issues were being corrected. The inspectors determined that although no related regulatory requirement exists, the station could strengthen this area of the CAP by ensuring all station personnel had an adequate working knowledge of entering issues into the CAP and receive proper feedback for issue written.

In addition, a review of the types of issues in the ECP indicated that site personnel were appropriately using the CAP and ECP to identify issues. Note that the site does not have a formal anonymous process for issue identification. Anonymous issues were normally received by or referred to the ECP and tracked under the ECP. The ECP coordinator would enter the issue into CAP when appropriate.

Findings

No findings of significance were identified.

4OA6 Management Meetings

Exit Meeting Summary

On September 1, 2009, the inspectors presented the inspection results to Mr. B. Adams, 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

B. Adams, Plant Manager
L. Bogue, Training Manager
C. Gayheart, Operations Director
S. Greenlee, Engineering Director
D. Gudger, Regulatory Assurance Manager
E. Hernandez, Senior Manager Plant Engineering
B. Spahr, Maintenance Director
D. Thompson, Radiation Protection Manager
P. Woessner, Site Correction Action Program Manager
B. Youman, Work Management Director
C. Keller, Nuclear Oversight

NRC

R. Skokowski, Branch Chief

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000454/2009008-01 05000455/2009008-01	URI	Potential Failure of all the Emergency Diesel Generators (EDG) for Both Units 1 and 2 during a Loss of Offsite Power Event
05000454/2009008-02	NCV	Untimely Corrective Actions for Sprinkler Obstructions

Closed

05000454/2009008-02	NCV	Untimely Corrective Actions for Sprinkler Obstructions
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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 or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

Issue Reports

IR 132570; Effectiveness Review of Corrective Actions Implemented as a Result of Root Cause Report Associated with IR 132570, February 13, 2004
IR 246015; Safety Related Pull Box and Seal-tight Loose, August 20, 2004
IR 285179; WR Needed to Support NDE Testing on IA Piping System, December 22, 2004
IR 310927; Additional question regarding AR 246206-07, March 10, 2005
IR 337202; WO00567273 2LS-WF021 Level Switch Defective, May 20, 2005
IR 464402; Excessive Moisture in SA System, March 10, 2006
IR 512522; Permanent Shielding on Identified Hot Spots, December 31, 2006
IR 513466; Corrosion Found on Level Switch Assembly, July 26, 2006
IR 527073; 2A SX PP Leak Det Sump Lvl High Alarm Won't Illuminate, September 4, 2006
IR 559283; FASA BACC 3YR, December 17, 2006
IR 567970; 1LS-WF018 Level Switch Failed Surveillance, December 11, 2006
IR 573763; 0GD01EE Found Outside Satisfactory Readings, December 29, 2006
IR 578529; Level Switch Needs Replacement at Next Opportunity, January 12, 2007
IR 605162; Review of 2006 Boric Acid Leaks, March 16, 2007
IR 609083; 1A RH HX Leak Detection Alarm not Working, March 26, 2007
IR 610826; NOS ID CAP Corrective Action Effectiveness Attribute DNME, March 30, 2007
IR 626623; IN 2207-09 - Equipment Operability Under Degraded Voltage, May 8, 2007
IR 636916; Unventable Gas Void discovered in 2SI06BB-24", June 4, 2007
IR 655767; Establish IA Header Testing Frequency, July 31, 2009
IR 659072; Conduct of Operations, August 9, 2007
IR 661984; Unexpected Partial Loss of Instrument Air, August 18, 2007
IR 661986; Entry into 2BOA SEC-4, Loss of Instrument Air Unit 2, August 18, 2007
IR 661988; Entry into 1BOA SEC-4, Loss of Instrument Air Unit 1, August 18, 2007
IR 665762; RIS 2007-21 Adherence to Licensed Power Limits, August 29, 2007
IR 671525; 0HS-IA045 Not Wired Properly, September 14, 2007
IR 671531; 1HS-IA045 Not Wired Properly, September 14, 2007
IR 671533; 2HS-IA045 Not Wired Properly, September 14, 2007
IR 678260; Improvement Recommendations from FASA, October 1, 2007
IR 687027; Issues with Cathodic Protection at Byron, September 27, 2007
IR 693502; Potential NCV of 10CFR Appendix B Criterion for 0SX138B, November 2, 2007
IR 696519; Missed Opportunity during OPEX Review, November 8, 2007
IR 699134-06; Outage Work Control Place DV Hydrolaze Ports into B2R15 & B1R17 Outage Schedules, November 14, 2007
IR 711514; BACC Program FASA Deficiency #1 – Walkdown Leaks Identified, December 14, 2007
IR 712524; Fleet-wide Scaffold Issues, December 17, 2007
IR 717396; WO Needed to Correct Wiring for 1HS-IA045, January 2, 2008
IR 717408; WO needed to correct wiring for 0HS-IA045, January 2, 2008
IR 717409; WO needed to correct wiring for 2HS-IA045, January 2, 2008
IR 717867; Follow up on IR 588710, January 3, 2008

IR 717993; Incorrect Procedure Step Identified, January 4, 2008
IR 721071, SX Piping Sediment Powerlabs Results, January 11, 2008
IR 727830; TRNG-Potential Procedure Error BOA ELECT-2 with Loss of AC114,
January 28, 2008
IR 730300; NRC Audit Identified Potential Ineffective Correct Action, February 1, 2008
IR 732962; Extent of Condition Regarding IR 730300 (Motor Reversal), February 7, 2008
IR 739569; Error Discovered in OBOA SEC-4 Rev. 102, February 22, 2008
IR 742711; CCA Identified Common Cause for Procedure Complexity, February 29, 2008
IR 742719; CCA Identified Common Cause in the Change Management Process,
February 29, 2008
IR 742722; CCA Identified Common Cause for Resource Management Issues,
February 29, 2008
IR 742726; CCA Identified Common Cause of Ineffective Corrective Action, February 29, 2008
IR 756048; Potential NRC Green NCV for ISI Weld Exam, March 28, 2008
IR 768979; 1B AF Diesel Gear Box and Right Angle Gear Drive Vibs High, April 29, 2008
IR 770364; NRC Questioning FP Sprinkler Potential Spray Obstructions, May 1, 2008
IR 774237; Alarm Did Not Come in When Tested, May 11, 2008
IR 774239; Alarm Did Not Come in When Tested, May 11, 2008
IR 775817; What Happened to the Plan for 1B AF Pump?, May 14, 2008
IR 778488; NEIL Inspection Results with Identified Issues, May 22, 2008
IR 779116; Scaffold Planks Removed, May 23, 2008
IR 784116; Alarm Did Not Come in When Tested, June 8, 2008
IR 784155; Alarm Did Not Come in When Tested, June 8, 2008
IR 785965; Potential Missed Surveillance VA 0C Non-Accessible Plenum, June 12, 2009
IR 788420; WF System Exceeded MR Criteria, June 19, 2008
IR 792881; Good Catch during Supervisor Review of VF Charcoal Sample WO, July 2, 2008
IR 795410; 0C VA Non-Access PLN Inlet Damper 0VA086YB Not Fully Closed, July 10, 2008
IR 801069; Permanent Shielding Engineering Evaluation Postponed, July 28, 2008
IR 804282; Byron Review of Braidwood IR 799972 and NRC Questions, August 6, 2008
IR 807254; Scaffold Identified in Plant without Proper Tracking Number, August 14, 2008
IR 837750; For Info: Degraded WF MR (A)(1) and Outstanding Work, October 29, 2008
IR 808375; FP Impacted by Scaffolding, August 18, 2008
IR 809865; NRC Issues with DOST Foam Sprinkler System Design, August 22, 2008
IR 810713; Byron Review of Braidwood IR 809865 and NRC FP Questions, August 25, 2008
IR 811213; OBVSR SX-5 Failed Surveillance, August 26, 2008
IR 811484; Unplanned LCOAR Entry 0A SX Make Up Pump, August 27, 2008
IR 814109; 0B SX PP Window Exceeded Duration by 43%, September 4, 2008
IR 815133; NEED WR to Dive SXCT Basin, September 8, 2008
IR 818587; IR Trending Is Not Always Accurate, September 16, 2008
IR 822118; Degraded Sample to 0A SX PH Meter and Sample Point, September 25, 2008
IR 822648; No Flow to 0B SX PH Meter, September 26, 2008
IR 827073; Silting Issues Need More Aggressive Action, October 6, 2008
IR 825860; CAPR 43 TO RCR 753012 for AF Diesel Requires 2nd Extension
IR 840266; 2B AF Pump Full Flow Test, November 4, 2008
IR 840590; No Support from Corporate to Close FP ACIT Item, November 5, 2008
IR 844909; 2B AF PP Gear Changer has a High Oil Level, November 14, 2008
IR 845019; 0B SXCT Basin Dive to be Rescheduled Prior to Spring, November 14, 2008
IR 848419; Corrosion on Conduit Fittings, November 21, 2008
IR 855687; RP Source Term Reduction Deficiency, December 12, 2008
IR 855939; EM Work Planning Instructional Aids, Required DOC. Control, December 12, 2008
IR 864942; Missed Opportunity – H3 Trend Reviews, January 9, 2009

IR 865490; Need WR to Replace GD Anode Beds, January 12, 2009
IR 870947; NRC ID'd Opportunity for Improving Pipe Condition Monitoring, January 23, 2009
IR 885355; Elevated Vibrations Noted on 2B AF Pump during Full Flow Test, February 25, 2009
IR 887050; 2B AF Diesel Engine Oil Leak – Potential Fire Concern, March 1, 2009
IR 891900; 1B AF Diesel Gear Box High Vibration Current Status, March 12, 2008
IR 893197; 1A DG Starting Air Line Filter Broken, March 15, 2009
IR 893770; 1DG 11MA Installed Backwards, March 15, 2009
IR 900039; NEIL Answer to Maximum Scaffold Size in Sprinkler Areas, March 30, 2009
IR 907857; Documentation of Past Operability for 1B AF PP Gearbox High Vibrations,
April 15, 2009
IR 913504; FP Impacted by Scaffolding, April 29, 2009
IR 913509; FP Impacted by Scaffold, April 29, 2009
IR 916612; 2B AF Pump Elevated Vibration Plan needed for B2R15 WO, May 5, 2009
IR 917322; NOS ID: No CAPR Assigned for Identified Root Cause, May 8, 2009
IR 918390; NOS ID Regulatory Commitment not Annotated in WC-AA-106 Work Screening and
Processing Revision 9, May 11, 2009
IR 919404; NOS Identified Issues with Checklist for Safety Culture, May 13, 2009
IR 919413; NOS ID: Untimely CAP Investigations, May 13, 2009
IR 919592; NOS ID CA Assignment Not Created for Required Documents, May 14, 2009
IR 919698; NOS Has Identified an Opportunity to Improve CAP Reviews, 5-14-09
IR 928244; Scaffold Sizing in Areas Protected by Sprinklers, June 5, 2009
IR 933068; PI&R FASA Deficiency 1.1, June 19, 2009
IR 933071; PI&R FASA Deficiency 2.1, June 19, 2009
IR 933075; PI&R FASA Deficiency 3.1, June 19, 2009
IR 933077; PI&R FASA Deficiency 3.2, June 19, 2009
IR 933083; PI&R FASA Deficiency 5.1, June 19, 2009
IR 933090; PI&R FASA Deficiency 5.3, June 19, 2009
IR 933097; PI&R FASA Deficiency 7.2, June 9, 2009
IR 933103; PI&R FASA Deficiency 7.4, June 19, 2009
IR 933105; PI&R FASA Deficiency 8.1, June 19, 2009
IR 934796; MMD Insufficient Resources for FP Sprinkler Nozzle WO 1238379, June 24, 2009
IR 942070; 1DG11MA Came Apart After 1A DG Start Unplanned LCOAR 1BOL 8.1,
July 15, 2008
IR 942070; Equipment Prompt associated with 1DG11MA Came Apart After 1A DG Start
Unplanned LCOAR 1BOL 8.1, July 21, 2009
IR 943712; Silting of 2AF017A and 2AF006A, July 20, 2009
IR 944177; Equipment Prompt associated with the Failure of Damper 0VC182Y, July 23, 2009
IR 944730; No Resolution to Long Term NEIL Issue Regarding Scaffolds, July 22, 2009
IR 946844; CAP Causal Analysis Not Performed, July 28, 2009
IR 958297; NRC Identified Discrepancy in FASA, August 27, 2009

Apparent Cause Evaluation

ACE 150691; 1LS-WF020 Defective, May 7, 2003
ACE 654830; Full Scope of Fire Seal Repair Not Identified, October 11, 2007
ACE 713035; Repeat NOS Findings on BOP HX Program, February 20, 2008
ACE 717993; Procedure Revision Error That Caused a Condition That Resulted in a LER,
March 3, 2008
ACE 779699; 0B SX M/U PP Failed To Run on Low Level Start, June 20, 2008
ACE 785965; Potential Missed Surveillance VA 0C Non-Accessible Plenum, July 31, 2008

ACE 827073; Non-essential Service Water Pump Motor Bearing Oil Cooler Cooling Water Blockages, November 17, 2008
ACE 844467; OSC Minimum Staffing Missing RP Tech during Drill, November 12, 2008
ACE 855260; Procedure Revision Error (Omitted Step) Caused a Condition that Resulted in a Fire Protection Damper Dropping Activated during Testing Surveillance, January 29, 2009
ACE 922281; Security – Failed Compensatory Measure, May 21, 2009
ACE 942070; 1DG11MA Came Apart After 1A DG Start, September 3, 2009
ACE 944177; Failure of Main Control Room Ventilation Damper, August 31, 2009

Common Cause Evaluation

CCA 655226; Analysis of 2007 Scaffold Program Procedural Adherence, August 27, 2007
CCA 718653; Review Cross-Cutting Aspect of Technical Human Performance Related to Assumptions and Their Potential Impact on Decision-Making, February 25, 2008

Audit, Assessment and Self-Assessments

IR 904202; Corporate SME Review of Site Formal Level 3 OPEX Evaluations; December 15, 2008
IR 917089; Operations Deep Dive Results, May 2009
Byron 2T08 Site Tri-Annual Performance Report, September 25, 2008
Byron 3T08 Site Tri-Annual Performance Report, January 20, 2009
Byron 1T09 Site Tri-Annual Performance Report, May 22, 2009
CAP Effectiveness Review 100114-07, October 12, 2007
Check-In Self Assessment 429827; Scaffold Program, March 29, 2006
Check-In Self Assessment 700027, Byron Station Scaffold Program, August 13, 2008
Check-In Self Assessment 700029, Evaluate the Effectiveness of the Oil Monitoring Program, November 20, 2008
Engineering Check-in 775839; Previous 2 years of QRT Results; June 5, 2008
Engineering Check-in 842066; System Walkdowns; August 20, 2008
Engineering Check-in 844102; Technical Evaluations (ECs); August 29, 2008
Emergency Preparedness Check-in 915612; NRC Exercise Inspection; March 15, 2009
Focused Area Self-Assessment 558566; Radiological Environmental Monitoring Program and Radiological Material Control Program, November 16, 2006
Focused Area Self Assessment 559283, Exelon Byron Boric Acid Corrosion Control Program, December 14, 2007
Focused Area Self-Assessment 699134; RP Source Term Reduction, November 14, 2007
Focused Area Self-Assessment 889107; Correction Action Program, June 19, 2009
Model FLS Flood Level Switch Part No. 53-4701-001, March 13, 2009
NOSPA-BY-04-1Q; Nuclear Oversight Quarterly Report, April 28, 2004
NOSPA-BY-04-2Q; Nuclear Oversight Quarterly Report, July 27, 2004
NOSPA-BY-04-3Q; Nuclear Oversight Quarterly Report, October 25, 2004
NOSPA-BY-04-4Q; Nuclear Oversight Quarterly Report, January 24, 2005
NOSPA-BY-05-1Q; Nuclear Oversight Quarterly Report, April 22, 2005
NOSPA-BY-05-2Q; Nuclear Oversight Quarterly Report, July 25, 2005
NOSPA-BY-05-3Q; Nuclear Oversight Quarterly Report, October 26, 2005
NOSPA-BY-05-4Q; Nuclear Oversight Quarterly Report, January 25, 2006
NOSPA-BY-06-1Q; Nuclear Oversight Quarterly Report, April 25, 2006
NOSPA-BY-06-2Q; Nuclear Oversight Quarterly Report, July 25, 2006
NOSPA-BY-06-3Q; Nuclear Oversight Quarterly Report, October 24, 2006
NOSPA-BY-06-4Q; Nuclear Oversight Quarterly Report, January 25, 2007

NOSPA-BY-07-1Q; Nuclear Oversight Quarterly Report, April 25, 2007
NOSPA-BY-07-2Q; Nuclear Oversight Quarterly Report, July 25, 2007
NOSPA-BY-07-3Q; Nuclear Oversight Quarterly Report, October 25, 2007
NOSPA-BY-07-4Q; Nuclear Oversight Quarterly Report, January 25, 2008
NOSPA-BY-08-1Q; Nuclear Oversight Quarterly Report, April 30, 2008
NOSCPA-BY-08-07; Byron Learning Programs CPA Report, June 10, 2009
NOSCPA-BY-08-07; Byron Learning Programs CPA Report, August 28, 2008
NOSA-BYR-07-01; Corrective Action Program Audit Report, March 30, 2007
NOSA-BYR-09-01; Corrective Action Program Audit Report, May 20, 2009
NOSA-BYR-05-05; Engineering Design Control Audit Report, November 16, 2005
NOSA-BYR-07-05; Engineering Design Control Audit Report, September 6, 2007
Operations Performance Report, January to March 2007
Operations Performance Report, April to June 2007
Operations Performance Report, October to December 2007
Operations Performance Report, January to March 2008
Operations Performance Report, April to June 2008
Operations Performance Report, July to September 2008
Operations Performance Report, October to December 2008
Operations Performance Report, January to March 2009
Operations Performance Report, April to June 2009

Miscellaneous

Byron Station Maintenance Rule Periodic Assessment #6, March 31, 2005
Byron Station Maintenance Rule Periodic Assessment #7, September 27, 2006
Byron Station Maintenance Rule Periodic Assessment #8, September 24, 2008
Byron Station Maintenance Rule Expert Panel Meeting Notes, June 12, 2007
Byron Station Maintenance Rule Expert Panel Meeting Notes, June 19, 2007
Byron Station Maintenance Rule Expert Panel Meeting Notes, February 29, 2008
Byron Station Maintenance Rule Expert Panel Meeting Notes, July 17, 2008
Byron Station Maintenance Rule Expert Panel Meeting Notes, September 16, 2008
Byron Station Maintenance Rule Expert Panel Meeting Notes, December 11, 2007
Byron Station Maintenance Rule Expert Panel Meeting Notes, February 23, 2006
Byron Station Maintenance Rule Expert Panel Meeting Notes, April 29, 2009
Byron Station Maintenance Rule Expert Panel Meeting Notes, April 23, 2009
Byron Station Maintenance Rule Expert Panel Meeting Notes, January 12, 2006
Byron Station Permanent Scaffold Log, August 26, 2009
Cathodic Protection Annual surveillance for 2007 and 2008
Drawing E-0-4031SX01, SX Loop Schematic Diagram, Revision C
Drawing E-0-4031SX02, SX Loop Schematic Diagram, Revision F
EC 372030; VA System Bypass Leakage Evaluation, Revision 0
Effectiveness Review 716194-25; EFR to Determine Effectiveness of CAPR 3 of Root Cause Documented in IR 687024, February 26, 2009
Effectiveness Review 716194-61; EFR to Evaluate Operations Performance Related to Operability Determinations and Associated Documentation in IRs, February 18, 2009
Equipment Prompt associated with 2A DG Pre-Lube Oil Pump Found Inoperable, July 25, 2009
List of Operating Transients from 2003 to Present
NFPA 13; Standard for the Installation of Sprinkler Systems, Edition 1983
Op Eval 07-005; Unventable Gas Voids in Cnmt Recirc Sump Piping, Revision 1
Op Eval 08-007; Gas Void at 2CS009A, Revision 5

Part Evaluation 38494; Justification for Change from a Gates Hose to a Federal Hose P/N 5515-350, March 8, 2005

Part Evaluation 31271; Justification for the Use of P/N 23516996 Detroit Diesel Series 149 Turbocharger Air Outlet Hose Coupling to Replace P/N 5106905 on the Auxiliary Feedwater (AF) Diesel Drive, March 30, 2004

Permanent Scaffold Request B-4846; April 1, 2004

Procedure Revision Expectations and Standards

Quality Receipt Inspection Package 110572, Catalog ID 1404945-2, Coolant Hose, February 9, 2005

Quality Receipt Inspection Package 113468, Catalog ID 1404945-2, Coolant Hose, June 7, 2005

Ultrasonic Thickness Calibration Sheet Report Number 2007-371

Work Order 153368 and 729302; Repair Safety Related Conduit, scheduled for September 2009

Work Order 969081-06; Repair Shorted Varistor in Panel 0GD01EE, March 28, 2009

Work Order 108846-01; Annual Cable Vault Inspection, November 20, 2008

Work Order 1094578-01; Take Readings on Cathodic Protection Rectifiers, January 25, 2008

Work Order 1101792-01; Take Readings on Cathodic Protection Rectifiers, February 20, 2008

Work Order 1108297-01; Take Readings on Cathodic Protection Rectifiers, March 28, 2008

Work Order 1117851; Replace All 1B AF PP Exhaust Manifold Cover Gaskets-B1R15, March 28, 2008

Work Order 1119393-01; Take Readings on Cathodic Protection Rectifiers, April 21, 2008

Work Order 1123917, Check EXH Manifold for Flatness at Next Work Window, July 31, 2008

Work Order 1127993-01; Take Readings on Cathodic Protection Rectifiers, May 19, 2008

Work Order 1137323-01; Take Readings on Cathodic Protection Rectifiers, June 23, 2008

Work Order 1148367-01; Take Readings on Cathodic Protection Rectifiers, July 21, 2008

Work Order 1162084-01; Take Readings on Cathodic Protection Rectifiers, September 22, 2008

Work Order 1170786-01; Take Readings on Cathodic Protection Rectifiers, October 20, 2008

Work Order 1179104-01; Take Readings on Cathodic Protection Rectifiers, November 17, 2008

Work Order 1187909-01; Take Readings on Cathodic Protection Rectifiers, December 23, 2008

Operating Experience

NRC Generic Letter 2007-01; Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients, February 7, 2007

NRC Generic Letter 2008-01; Managing Gas Accumulation in ECCS, January 11, 2008

NRC Information Notice 2007-09; Equipment Operability under Degraded Voltage Conditions, March 26, 2007

NRC Information Notice 2008-06; Instrument Air System Failures Resulting in Manual Reactor Trip, April 10, 2008

NRC Information Notice 2009-11; Configuration Errors, July 7, 2009

NRC Regulatory Issue Summary 2007-20; Implementation of Primary to Secondary Performance Criteria, August 23, 2007

NRC Regulatory Issue Summary 2007-21; Adherence to Licensee Power Limits, Revision 1

NRC Regulatory Issue Summary 2009-02; Use of Containment Atmosphere Gaseous Radioactivity Monitors as Reactor Coolant System Leakage Detection Equipment at Nuclear Power Plants, January 29, 2009 Revision 0 and May 8, 2009 Revision 1

IR 522904-02; OPEX Review of Fermi 2 Event Notification 42783, November 29, 2006

IR 588710; OE 24135 Applicability Review to Byron Station, February 7, 2007

IR 772317; IN 2008-06 Instrument Air Failures Resulting in Manual Scram, May 6, 2008

IR 772317-02; Byron OPEX Review of NRC IN 08-06, IA Failure Causes Trip, July 14, 2008

IR 772915; OPEX-Industry Experiences Involving IA Lines, May 7, 2008
IR 820893-02; OPEX SME review of INPO SEN 274, "Multiple Reactor Coolant Pump Seal Failures During Cooldown;" November 12, 2008
IR 892168-2; OPEX review of NRC ENS 44863, "Power Supply Failure Resulting in Tech Spec Required Shutdown (Calloway)," May 21, 2009
IR 900944; OPEX evaluation of NNOEs 28846 (Update) and 28448, "FME Identified in the Secondary Side of Both SGs," July 7, 2009

Plant Procedures

1BISR 3.1.7-002; Channel Operation Test of Delta T/Tave Loop 1B Protection Channel II (1RC-0421), Revision 15
1BOA ELECT-2; Loss of Instrument Bus, Revision 104
1BOSR NR-1; Unit One Power History Hourly Surveillance, Revision 13
BAP 300-1; OP-AA-100, Conduct of Operations Manual, Byron Addendum, Revision 24
BAP 300-1A1; At the Control Areas, Revision 52
BMP 3203-2; Preventive Maintenance of Auxiliary Feedwater Pump Diesel Engine, Revision 0
AD-AA-101; Processing of Procedures and T&RM, Revision 20
AD-AA-101-1002; Writer's Guide and Process Guide for Procedures and T&RM, Revision 13
AD-AA-101-F-03; Procedure/T&RM Validation Checklist, Revision 0
AD-AA-1110; Exelon Nuclear Corporate Functional Area Manager (CFAM) and Peer Group Processes, Revision 6
CC-AA-103; Configuration Change Control for Permanent Physical Plant Changes, Revision 19
CC-AA-103-1001; Configuration Change Control Guidance, Revision 0
CY-BY-170-301; Byron Radiological Environmental Monitoring Program, Revision 6
ER-AA-2030; System Walk-down Standards, Revision 8
ER-AA-335-045; Manual Ultrasonic Requirements for Non-PDI Examinations, Revision 1
ER-AA-335-1005; Standard Approach on How to Evaluate and Inspect Outside Diameter (OD) Corrosion on Piping and Components, Revision 0
LS-AA-115; Operating Experience, Revision 10
LS-AA-125, Corrective Action Program (CAP) Procedure, Revision 12
LS-AA-125-1001, Root Cause Analysis Manual, Revision 7
LS-AA-125-1003; Apparent Cause Evaluation Manual, Revision 8
LS-AA-126-1001; Focused Area Self-Assessments, Revision 5
LS-BY-120; Issue Identification and Screening Process, Revision 0
LS-BY-125-1005; Coding and Analysis Manual, Revision 6A
MA-AA-716-025; Scaffold Installation, Modification, and Removal Request Process, Revision 0
MA-AA-716-025; Scaffold Installation, Modification, and Removal Request Process, Revision 5
MA-AA-716-025; Scaffold Installation, Modification, and Removal Request Process, Revision 7
MA-AA-796-024; Scaffold Installation, Inspection, and Removal, Revision 8
MA-BY-EM-1-FP002-BY07; Test Report Package, Fire Protection Zones 3.2C-2, 2Z3, Suppression Zones 2S-45, Detection Zones 2D-53 (Zone 3.2C-2), Revision 54
OP-MW-201-007; Fire Protection System Impairment Control, Revision 7
OP-AA-201-001; Fire Marshal Tours, Revision 4
RP-AA-500; Radioactive Material Control, Revision 14
RP-AA-503; Unconditional Release Survey Method, Revision 2
Vendor Sampling Procedure, EMIL-SPM-1, Revision 12

Root Cause Evaluations

- RCE 42563; Root Cause Report; Ownership Conflicts Create Ineffective Corrective Actions Associated with Operating Department Abnormal Component Position Program, January 2, 2001
- RCE 132570; Equipment Returned to Service with the Master Clearance Order Card and Personnel Protection Card Still Hanging, dated January 10, 2003
- RCR 661984; Unexpected Annunciators & Partial Loss of Instrument Air, September 20, 2007
- RCE 753012; Fire on the 1B Auxiliary Feedwater Pump Diesel Southwest Exhaust Manifold, June 4, 2008
- RCR 801095; Review of NRC Findings with Crosscutting Aspects in Human Performance, September 29, 2008
- RCE 918240; Adverse Trend in Clearance and Tagging Events (918240), May 11, 2009
- RCE 31659; Root Cause Report associated with No Boric Acid Flow During Normal Make-up of the U-2 Volume Control Tank, August 8, 2000

Issue Reports Generated As a Result of the NRC Inspection

- IR 952374; Procedure Enhancement for COT Procedures for Delta-T Loops, August 12, 2009
- IR 953448; Lack of Documentation for Installed Scaffolding in 1A DOST, August 14, 2009
- IR 957964; Drawing Update Needed for M-55 Sheet 15A, August 26, 2009
- IR 958246; NRC Observation of Potential Trending Enhancement, August 27, 2009
- IR 958297; Discrepancy Identified in Check-In 558566 Recommendation; August 27, 2009
- IR 958356; NRC Identified Issues on WF; August 27, 2009
- IR 958375; Timeliness of Actions to Address AF Vibration Issues, August 27, 2009
- IR 958807; Questions during NRC Audit, August 28, 2009
- IR 958882; NRC Concern – Loss of IA could Affect DG JW Temps, August 28, 2009
- IR 958974; NRC PI&R Inspection Observation – CA timeliness Op Evls 07-005 & 08-007, August 28, 2009
- IR 958921; Recommendation from NRC during PI&R Inspection, August 28, 2009
- IR 962810; CAP Trend Methodology Does Not Code Repeat Equipment Issues, September 9, 2009
- IR 962835; No Action Tracking Assignment Created to Follow Change, September 9, 2009
- IR 962858; Enhancement Look at a Longer Periodicity When Reviewing RCR, September 9, 2009
- IR 968120; BOS Procedure Changes Not Timely, September 21, 2009
- IR 979131; Enhancements Identified with Fire Impairment Controls, October 14, 2009

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
CAP	Corrective Action Program
CAPR	Corrective Action to Prevent Reoccurrence
CFR	Code of Federal Regulations
DOST	Diesel Oil Storage Room
EDG	Emergency Diesel Generator
ECP	Employee Concerns Program
JW	Jacket Water System
HX	Heat Exchanger
IA	Instrument Air System
IMC	Inspection Manual Chapter
IR	Inspection Report
IR	Issue Report
MRC	Management Review Committee
NCV	Non-Cited Violation
NPSH	Net Positive Suction Head
NRC	Nuclear Regulatory Commission
NOS	Nuclear Oversight
OE	operating experience
SA	Service Air System
SCWE	Safety Conscious Work Environment
SDP	Significance Determination Process
SX	Essential Service Water System
TS	Technical Specifications

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Sincerely,

/RA/

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

Docket Nos. 50-454; 50-455
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Letter to C. Pardee from R. Skokowski dated October 15, 2009.

SUBJECT: BYRON STATION, UNIT 1 & 2 NRC PROBLEM IDENTIFICATION AND
RESOLUTION INSPECTION REPORT 05000454/2009008; 0500455/2009008

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