



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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October 17, 2011

Mr. Michael Pacilio
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 05000454/2011008; 0500455/2011008**

Dear Mr. Pacilio:

On September 2, 2011, 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 7, 2011, 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. Two NRC-identified findings of very low safety significance (Green) associated with procedure adherence and untimely corrective actions were identified. These findings were determined to involve violations of NRC requirements. However, because of their very low safety significance and because the issues were entered into your corrective action program, the NRC is treating these violations as non-cited violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

In addition, several examples of minor problems were identified, including weaknesses in the trending of procedural issues and long-standing open corrective action assignments.

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 the 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/

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

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

Enclosure: Inspection Report No. 05000454/2011008 and 05000455/2011008
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: 05000454/2011008 and 05000455/2011008

Licensee: Exelon Generation Company, LLC

Facility: Byron Station, Units 1 and 2

Location: Byron, IL

Dates: August 15, 2011, through September 2, 2011

Team Leader: R. Ng, Project Engineer

Inspectors: J. Robbins, Resident Inspector
C. Brown, Reactor Inspector
D. Jones, Reactor Engineer
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Management Agency

Approved by: E. Duncan, Chief
Branch 3
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000454/2011008; 05000455/2011008; 08/15/2011 – 09/02/2011; Byron Station, Units 1 and 2; Identification and Resolution of Problems.

This inspection was performed by region-based inspectors, the Byron Resident Inspector, and the Byron Illinois Emergency Management Agency (IEMA) resident inspector. Two NRC-identified Green findings with associated Non-Cited Violations (NCVs) of NRC requirements were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Assigned cross-cutting aspects were determined using IMC 0310, "Components Within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Identification and Resolution of Problems

On the basis of the samples selected for review, the team concluded that, overall, the corrective action program (CAP) at Byron Station was effective in identifying, evaluating and correcting issues. The licensee had a low threshold for identifying issues and entering them into the CAP. Issues entered in the CAP were properly prioritized and evaluated based on plant risk and uncertainty. Corrective actions were generally implemented in a timely manner, commensurate with safety significance. Operating Experience (OPEX) was entered into the CAP and appropriately evaluated. The use of OPEX was integrated into daily activities and found to be effective in preventing similar issues at the plant. In addition, the licensee's self-assessments, audits, and effectiveness reviews were found to be conducted at appropriate frequencies for all departments. The assessments reviewed were thorough and effective in identifying site performance deficiencies, programmatic concerns, and improvement opportunities. On the basis of the interviews conducted, the inspectors did not identify any issues that suggested conditions were not conducive to the establishment and existence of a Safety Conscious Work Environment (SCWE) at Byron Station. The staff was aware of and generally familiar with the CAP and other station processes, including the Employee Concerns Program (ECP), through which concerns could be raised.

There were two Green findings, each with an associated NCV, identified by the team during this inspection. A Green finding with two examples was identified that concerned the licensee's failure to implement corrective actions in a timely manner to address previously identified NRC violations. A second Green finding identified was related to the licensee's failure to initiate Issue Reports (IRs), as required by licensee procedures, to address potential equipment operability issues. The team also identified several examples of minor issues, including weaknesses in the trending of procedural issues and long-standing open corrective action assignments.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green: The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," when licensee personnel failed to implement timely corrective actions to address two

previously issued NCVs. The two NCVs were related to the lack of design analysis documentation associated with the Recycle Holdup Tank (RHUT); and tornado missile and seismic protection for the Diesel Oil Storage Tank (DOST) vent lines. Specifically, the licensee had not completed required design analyses for these issues at the conclusion of this inspection, although the violation associated with the RHUT was initially identified by NRC inspectors in June 2007 and the violation associated with the DOST vent lines was initially identified by NRC inspectors in February 2009. The licensee entered this issue into their CAP as IR 1269928 and planned to complete the required analyses by April 2012.

This finding was of more than minor significance because the issue was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase I - Initial Screening and Characterization of Findings," Table 4a for the Mitigating Systems Cornerstone and answered "No" to all the Mitigating Systems Cornerstone questions. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system. Therefore, the finding screened as having very low safety significance (Green). This finding had a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area (H.2(a)) because the licensee failed to maintain long-term plant safety through minimization of long-standing equipment issues. (Section 4OA2.1.b.3.i)

- Green. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when licensee personnel failed to initiate IRs during the review of OPEX in accordance with licensee procedures to ensure that immediate actions, operability determinations, and reportability concerns were addressed by shift management within 24 hours. The licensee entered this issue into the CAP as IR 1257548 and completed the required shift management review.

The finding was of more than minor significance because, if left uncorrected, the issue would have the potential to lead to a more significant safety concern. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase I - Initial Screening and Characterization of Findings," Table 4a for the Mitigating Systems Cornerstone and answered "No" to all the Mitigating Systems Cornerstone questions. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system. Therefore, the finding screened as having very low safety significance (Green). This finding had a cross-cutting aspect in the Operating Experience (OPEX) component of the Problem Identification and Resolution (PI&R) cross-cutting area (P.2(a)) because the licensee's procedures and guidance for OPEX did not ensure the systematic collection, evaluation, and communication to affected internal stakeholders, in a timely manner, of relevant internal and external OPEX. (Section 4OA2.2.c)

B. Licensee-Identified Violations

None.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution (71152B)

This inspection constituted one biennial sample of Problem Identification and Resolution (PI&R) as defined by Inspection Procedure 71152, "Problem Identification and Resolution." Documents reviewed are listed in the Attachment to this report.

.1 Assessment of the Corrective Action Program Effectiveness

a. Inspection Scope

The inspectors reviewed the procedures and processes that described Exelon's Corrective Action Program (CAP) at Byron Station to ensure, in part, that the requirements of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," were met. The inspectors observed and evaluated the effectiveness of meetings related to the CAP, such as Station Ownership Committee and Management Review Committee (MRC) meetings. Selected licensee personnel were interviewed to assess their understanding of and their involvement in the CAP.

The inspectors reviewed selected Issue Reports (IRs) across all seven Reactor Oversight Process (ROP) Cornerstones to determine if problems were being properly identified and entered into the licensee's CAP. The majority of the risk-informed samples of IRs reviewed were issued since the last NRC biennial PI&R inspection conducted in August of 2009. 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 significance and evaluation classes, including 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 (SCAQs), the inspectors evaluated the licensee's corrective actions to prevent recurrence and for less significant issues, 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 auxiliary building ventilation (VA) system to review in detail since VA was a Maintenance Rule (a)(1) system. The primary purpose of this review was to determine whether the licensee was properly monitoring and evaluating the performance of Maintenance Rule systems through effective implementation of station monitoring programs. The inspectors interviewed the VA system engineer, reviewed numerous VA-related IRs, and reviewed root cause evaluations associated with the VA system. A 5-year review of VA issues was performed to assess the licensee's efforts in monitoring for system degradation due to aging. The inspectors also performed walkdowns, as needed, to verify the resolution of issues.

The inspectors reviewed the licensee's CAP trend analysis and independently performed a 5-year review of human performance trend data focusing on CAP documents that identified, through trend codes, procedural issues as a contributing cause to determine if issues were adequately characterized to identify adverse trends or repetitive issues.

The inspectors examined the results of self-assessments of the CAP completed during the review period. The results of the self-assessments were compared to 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, as necessary, to verify the resolution of the issues.

The inspectors performed an in-depth review of the station's Measurement and Test Equipment (M&TE) program since systematic weakness of this program, if they existed, could potentially affect numerous mitigating systems.

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 (OPEX) 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.

i) Observations:

Trend Analysis

Overall, site performance continued to trend in a positive direction. The composite error rate trend data for errors per 10,000 hours worked was routinely below the site goal of three. The individual performance of the operations, maintenance, and engineering departments all contributed to an overall improvement in site performance.

One of the methods utilized by the site to measure and identify plant performance was the trending of CAP data. Trend codes were assigned to each CAP document with a significance level between 1 and 4; 1 being issues of high significance or time sensitive and 4 being low significance or not time sensitive. The minimum set of trend codes included data related to the method of discovery, event type, associated process, and department/organizational identifiers. This data was collected over time and subjected to various analyses.

Numerous analysis reports were available and routinely published facilitating identification of adverse performance trends. The nature of the analyses was such that much of it was automated. Software was used to determine if data had changed in a statistically significant manner. The current reports supported the identification of trends, but were not identifying performance issues that were not changing. For example, if a given parameter was neither improving nor degrading, the current reports would not draw attention to this parameter. This was the case whether performance exceeded expectations and was steady or was below expectations and was steady. The licensee acknowledged this weakness and entered this issue into the CAP as IR 1260159.

The inspectors selected event codes associated with procedures for further assessment. Due to changes in coding methodology, the inspectors focused on the last 11 quarters of data, dating back to January 2009. The three codes selected were "Procedure Adherence," "Procedure Inadequate," and "Process Inadequate." There were approximately 1700 CAP documents coded with these three codes over the 11 quarters reviewed. The inspectors held discussions with members of the licensee staff to understand the breadth of issues that were characterized under the "Procedure Inadequate" and "Process Inadequate" codes specifically.

The current coding categories did not provide a method for differentiating between items that one might characterize as editorial changes, items one might characterize as enhancements, and items one might characterize as warranting placing the procedure on hold. Therefore, under the current methodology, data regarding the relative strength or weakness of procedures and their contribution to plant issues could be misleading. The licensee acknowledged this weakness and entered this coding issue into the CAP as IR 1268584.

(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 issue.

The inspectors determined that the MRC CAP review meeting was generally thorough and maintained a high standard for evaluation quality. Members of the MRC discussed the issues presented in sufficient detail and challenged presenters regarding their conclusions and recommendations.

The inspectors determined that the licensee was generally effective at evaluating equipment functionality requirements after a degraded or non-conforming condition was identified. The inspectors reviewed Maintenance Rule action plans and issue reports associated with the VA system. A number of deficiencies were identified in the last 5 years, which resulted in the system entering into a Maintenance Rule (a)(1) status. The licensee developed an action plan to resolve the deficiencies and appropriately adjusted the actions when new issues were discovered.

i) Observations:

The inspectors identified that there were a large number of open IRs at the time of the inspection. More than 12 percent of the open IRs were greater than 1000 days old. One IR originated in 2002 and still had incomplete actions. The inspectors reviewed a

sample of these open IRs and determined that most of the remaining actions were enhancements and the due dates for the actions had been extended a number of times due to resource limitations or other emergent issues. The inspectors verified that the sampled IRs were evaluated and actions assigned appropriately.

However, in one case, the inspectors identified that the licensee misclassified a corrective action as an enhancement. This issue was related to a design calculation error of a support for the non-essential service water system. The inspectors determined that this issue was minor since it did not involve a safety-related system and the failure of the support would not affect other safety-related systems.

The inspectors regarded this aging IR issue as an improvement opportunity since the outstanding actions, although being considered enhancements, could potentially affect the licensee's focus on more important safety issues and complicate trending analyses and resource utilization.

(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 root or apparent cause methodologies were resolved in accordance with the CAP and applicable procedural requirements. Corrective actions designed to prevent recurrence were generally comprehensive, thorough, and timely. The inspectors sampled corrective action assignments for selected NRC-documented violations and determined that actions assigned were generally effective and timely.

However, the inspectors identified a relatively large number of outstanding corrective action assignments. Prior to this inspection, the licensee also identified this negative trend and investigated the issue. Licensee personnel stated that the primary reasons for the large number of open corrective actions were resource limitations and the development of emergent issues warranting more immediate attention. The inspectors subsequently selected the open corrective actions that were over 1000 days old to review for timeliness. The inspectors concluded that most of these corrective actions were timely due to the relatively long lead time required for modification or for NRC approval. However, the inspectors did identify two examples of untimely corrective actions that was the subject of a Green finding as described below.

i) Findings

Untimely Corrective Actions for Previously Identified Non-Cited Violations

Introduction: The inspectors identified a Green finding and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," when licensee personnel failed to implement timely corrective actions to address two previously issued NCVs.

Description: As documented in NRC Inspection Report 05000454/455/2008009, dated November 12, 2008, NCV 05000454/455/2008009-02 was issued when licensee personnel failed to adequately evaluate and maintain the required water volume in the Recycle Holdup Tank (RHUT) necessary to quench the design basis Residual Heat

Removal (RHR) system relief valve discharge into the RHUT, incorporate appropriate minimum RHUT level requirements into the RHUT level control procedure, and evaluate the effect of dynamic water hammer loads on RHUT inlet piping resulting from relief valve discharges into the RHUT. This issue was initially identified by the NRC in June 2007. The licensee entered this issue into their CAP as IR 680626 and IR 622574. As part of their immediate corrective actions at that time, the licensee instituted administrative controls to provide an adequate quench volume for the RHUT and initiated an action to perform an analysis to investigate the magnitude of the potential water hammer loads on the RHUT inlet piping.

As part of their long-term corrective actions, the licensee generated an action to determine how to resolve the RHUT issues with agreement from Braidwood Station. The agreement was reached with Braidwood in March 2008 and a revised corrective action was generated to track the final resolution of the issue. The revised corrective action included the performance of a water hammer analysis; and a RHUT piping and accident analysis, including an offsite dose analysis. Funding for these evaluations was approved for 2009, and the revised corrective action had an initial due date of December 2009.

In November 2009, the water hammer analysis was received from the vendor for owner review and acceptance. The RHUT pressure analysis was completed by the vendor and approved by the licensee in February 2010. However, the licensee decided to have a third party review the water hammer analysis before the result could be used for the piping analysis. In addition, the offsite dose analysis needed to be re-performed due to a non-qualified vendor being used and the inability of the licensee to qualify the vendor's work. Contracts for all these analyses were issued between April and June 2011, and were scheduled to be completed by December 2011. At the end of this inspection, the licensee had not completed the actions to address the original NCV issued on November 12, 2008.

As documented in NRC Inspection Report 05000454/455/2009004, dated November 5, 2009, NCV 05000454/455/2009004-02 was issued when licensee personnel failed to seismically support and protect the emergency diesel generator (EDG) Diesel Oil Storage Tank (DOST) vent lines from tornado generated missiles. This issue was initially identified by the NRC in February 2009. The licensee entered this issue into their CAP as IR 877430. As part of their immediate corrective actions at that time, the licensee performed an operability determination and concluded that even with the vent lines significantly degraded (crimped) or in the event that a seismic event caused the lines to fail completely, sufficient air would enter the DOSTs to replace the approximately one cubic foot per minute of fuel required to support EDG operation. As part of their long-term corrective actions, the licensee planned to formalize design basis documentation to justify the existing condition.

In August 2009, the licensee determined that the existing condition could not be justified and a physical modification was needed to restore regulatory compliance. In March 2010, the licensee determined that a vacuum breaker would be installed to resolve the issue. Due to other emergent issues and the complexity of the vacuum breaker modification and supporting analyses, the due date for resolving this issue was extended twice to December 2010. In December 2010, the licensee determined that the maximum allowable external pressure that the DOST could withstand was needed to design

the vacuum breaker. An external vendor was contracted to calculate this maximum allowable external pressure; however, funding was not available until 2011. In May 2011, the licensee received the draft vendor analysis for the maximum allowable external pressure of the DOST. These results invalidated the licensee's original plans to install a vacuum breaker.

In July 2011, the licensee concluded that a new modification was needed to resolve the issue. At the end of this inspection, the licensee was in the process of evaluating whether to re-route the vent line or to install a vacuum breaker and loop seal combination. This action had a due date of April 2012 with the actual modification installation not expected to be completed before the end of 2012.

Analysis: The inspectors determined that the licensee's failure to correct, in a timely manner, design issues identified in NRC Inspection Report 05000454/455/2008009, dated November 12, 2008, associated with NCV 05000454/455/2008009-02, and NRC Inspection Report 05000454/455/2009004, dated November 5, 2009, associated with NCV 05000454/455/2009004-02, was a performance deficiency that warranted a significance determination.

The issue was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the RHUT was designed to support operation of the RHR system and the DOST vent line was designed to support operation of the EDGs; both of which were adversely affected by the issues identified and discussed above. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase I - Initial Screening and Characterization of Findings," Table 4a for the Mitigating Systems Cornerstone and answered "No" to all the Mitigating Systems Cornerstone questions. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system. Therefore, the finding screened as having very low safety significance (Green).

This finding had a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area (H.2(a)) because the licensee failed to maintain long-term plant safety by the minimization of long-standing equipment issues.

Enforcement: 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to ensure that conditions adverse to quality are promptly identified and corrected.

Contrary to the above, as of September 2, 2011, the licensee failed to promptly correct two conditions adverse to quality as previously described in NCV 05000454/455/2008009-02 and NCV 05000454/455/2009004-02. Specifically, the design control deficiencies related to these issues had not been corrected since the NCVs were initially issued in November 2008 and November 2009, respectively. Because this violation was of very low safety significance and because it was entered into the licensee's CAP as IR 1269928, this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy.

**(NCV 05000454/2011008-01; 05000455/2011008-01: Untimely
Corrective Actions for Previously Identified Non-Cited Violations)**

.2 Assessment of the Use of Operating Experience

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the Operating Experience (OPEX) program. Specifically, the inspectors reviewed the OPEX program implementing procedures, and completed evaluations of OPEX issues and events. The inspectors determined whether the licensee was effectively integrating OPEX 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 OPEX information in developing departmental assessments and facility audits. The inspectors also assessed if corrective actions, as a result of OPEX experience, were identified and implemented in an effective and timely manner.

b. Assessment

In general, OPEX was effectively used at the station. The inspectors observed that OPEX was discussed as part of the daily station and pre-job briefings. Industry OPEX was effectively disseminated across plant departments and no issues were identified during the inspectors' review of licensee OPEX evaluations. During interviews, several licensee personnel commented favorably on the use of OPEX in their daily activities.

c. Findings

Failure to Initiate Issue Reports

Introduction: The inspectors identified a Green finding and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when during the review of OPEX, licensee personnel failed to initiate IRs in accordance with licensee procedures to ensure that immediate actions, operability determinations, and reportability concerns were addressed by shift management within 24 hours.

Description: The inspectors reviewed OPEX 1173590, "Part 21 ENS 46545 ABB Potential Defect Overcurrent Relays," dated February 10, 2011, and determined that the OPEX evaluation was completed and approved on April 21, 2011, following issuance of the associated 10 CFR Part 21 Notification on January 14, 2011. The inspectors noted that the subject matter expert in the Byron procurement engineering staff completed the OPEX evaluation using Attachment 1 of the OPEX evaluation template, LS-AA-115-1003, "Processing of Significance Level 3 OPEX Evaluations," Revision 1.

Block I, "Event Summary," of the completed OPEX evaluation identified that the subject of the 10 CFR Part 21 Notification involved the seismic qualification of overcurrent relays installed in 4.16 kV and 6.9 kV switchgear at Byron and Braidwood Station.

Block II, "Operability Concerns," specifically directed the OPEX evaluator to perform the following action:

"Evaluate the component(s)..... to determine if similar deficiencies are present that could represent potential operability issues. Provide sufficient justification to support whether potential operability concerns may exist. If an operability concern is established, provide the associated IR number. IR # _____ "

The inspectors noted that the OPEX evaluator had not identified a potential operability concern despite having identified in Block I that the relays identified in the 10 CFR Part 21 Notification were installed in the plant. Instead, the evaluator documented the following:

"It is not possible to make an Operability Determination at this time. There is inadequate information from ABB and Westinghouse to determine the affect the de-rated seismic qualification test levels for the COM overcurrent protection relays has on Byron Station. Since we do not have definitive information available to perform a detailed technical evaluation at this time, there is no need to evaluate the potential impact on operability, i.e. this issue is not in operability space at this time. When technical data is available, operability will be addressed in accordance with the appropriate technical reviews and evaluation process."

Block III, "Applicability to Fleet or Station," requested, in part, "Based on your review, is the issue applicable to station ... components? Yes or No." The OPEX evaluator correctly determined, "Yes, Byron Station has COM-5 and COM-11 overcurrent protection relays installed in the plant in the Reactor Coolant Pump (RCP) motor control circuits." However, the OPEX evaluator had not noted that the relays were safety-related and protected the containment electric cable penetrations for the RCPs from failing due to an overcurrent condition.

Block VI, "Actions," noted that, "An IR must be initiated for any/all conditions adverse to quality that were identified in this evaluation." The OPEX evaluator did not identify the potentially suspect seismic qualification of the safety-related relays as a condition adverse to quality (CAQ) and therefore, an IR was not initiated.

The inspectors reviewed the licensee's procedures for evaluating 10 CFR Part 21 Notifications. The OPEX evaluation was completed in accordance with licensee procedure LS-AA-115, "Operating Experience Program," Revision 17. Attachment 1 of this procedure classified 10 CFR Part 21 Reports as Significance Level 3 to be evaluated using Manual LS-AA-115-1003. The purpose of Manual LS-AA-115-1003 was, in part, "to provide guidance on the process to effectively conduct an OPEX Evaluation for applicable Part 21 Notifications and other important OPEX." Paragraph 1.3 of LS-AA-115 stated, in part, that "This manual is training and reference material, not a procedure." Attachment 1 to LS-AA-115-1003 was an evaluation template that provided guidance for completing the OPEX evaluation. The inspectors noted that although Section 4.1.5 of Procedure LS-AA-115 required a determination of whether the OPEX had the potential to impact Reactor Safety, Industrial Safety, or Generation for Level 2 OPEX documents, this determination was not technically required for Level 3 OPEX documents.

The inspectors reviewed LS-BY-125, "Corrective Action Program (CAP) Procedure," Revision 3, and noted that this procedure stated, in part, that "The identification and initial screening of the undesirable conditions is performed in accordance with LS-AA-120, "Issue Identification and Screening Process." The inspectors noted that Section 4.1.2 of LS-BY-125 required that an IR be initiated in accordance with LS-AA-120 "at any time (e.g., during an investigation, review of a corrective action closure, review of a previous IR) a SCAQ or condition adverse to quality (CAQ) or any question of either current or past Operability/Reportability arises." Procedure LS-AA-120, "Issue Identification and Screening Process," required that all nuclear personnel and contractors identify any conditions that could have an undesirable effect on the performance of equipment, personnel, or organizations; ensure immediate actions are taken to place the situation in a safe condition; verbally report to a supervisor or the control room; and properly document the issue. Operations shift management was also required by LS-AA-120 to ensure appropriate immediate actions were taken, including determining impact on operability and reportability, and that operations management should complete these reviews within the same shift, with the operability determination completed within 24 hours.

On April 6, 2011, IR 1198414, "West NSAL 03-07 Supplement 1 Concerning ABB 1E Relays," was initiated on the same issue as OPEX 1173590 as related to the seismic qualification of the ABB COM-5, -9, and -11 relays. The licensee's immediate action was to generate the IR "to determine any immediate potential operability impacts." However, IR 1198414 did not identify that the deficient relays were installed in the plant, the equipment the relays protected, and what could happen if the relays failed. Consequently, on April 7, 2011, the shift manager documented the following in IR 1198414:

"No Specific equipment was identified in this IR to evaluate Operability/Reportability. Additional IRs need to be written for specific equipment affected and if Operability/Reportability is a concern. Shift review for Operability and Reportability complete."

IR 1198414 was then forwarded to the same OPEX evaluator that reviewed OPEX 1173590. With this new information, the evaluator closed OPEX 1173590 and evaluated the seismic qualifications through IR 1198414. The OPEX evaluation documented that the relays remained qualified for use in the plant. With respect to the shift manager's remarks regarding new IRs being initiated if any specific equipment was affected, the OPEX evaluator concluded that no new IRs needed to be initiated since Engineering personnel at Byron and Braidwood had both reviewed their equipment records and confirmed that the relays were only installed in the RCP circuit breakers. The inspectors noted that the OPEX issue was subsequently reviewed, approved, and closed on April 19, 2011, and that no IRs were initiated that communicated the relay issue to the Operations department for review. Therefore, an operability determination was not completed by the Operations staff.

When the inspectors discussed this issue with licensee personnel, two IRs were immediately initiated. The first, IR 1257458, "NRC PI&R Issues Identified with IR 1198414," dated August 30, 2011, was intended to communicate the issue to Operations for an immediate operability determination. The shift manager concluded the relays were operable based on the additional information provided regarding the

seismic qualifications and requested a full operability evaluation from the engineering staff. The second, IR 1257444, "Clear Direction Is Not Provided in LS-AA-115-1003," dated August 30, 2011, identified that the guidance in LS-AA-115-1003 could be misinterpreted to permit an OPEX evaluator to perform an operability determination and that the procedure was unclear as to whether an IR should be generated as an immediate action if potentially defective components were installed in the plant.

Overall, the inspectors concluded that despite identifying that the 10 CFR Part 21 Notification was applicable to the plant, recognizing that potentially defective relays that were the subject of the 10 CFR Part 21 Notification were installed in the plant, and clear direction in at least two blocks of the OPEX evaluation template to generate IRs, licensee personnel mistakenly concluded that engineering staff had the sole authority to determine whether an operability concern or CAQ existed. The inspectors also noted that an Engineering department manager had reviewed and approved the conclusions in the operability evaluation on April 21, 2011. Consequently, no IRs identifying the installation of potentially defective relays in the plant had been initiated, and therefore no operability determinations were performed for the installed potentially defective relays by the Operations department shift manager (the only person authorized to make an operability and reportability determination) between February 10, 2011 and August 30, 2011.

On August 31, 2011, IR 1257920, "10 CFR Part 21 Notification of Deviation – ABB KF Relay Seismic Ratings," was initiated identifying another instance of not generating an IR for an immediate operability determination after the identification of possibly deficient components installed in the plant. In this case, the OPEX issue, which was received on July 27, 2011, was not entered into the licensee's CAP for review until an extent of condition review for the previous two issues discussed above was identified.

Analysis: The inspectors determined that the licensee's failure to follow station procedures to generate IRs to identify potentially defective components installed in the plant and obtain an immediate operability determination from the shift manager was a performance deficiency warranting a significance evaluation.

The issue was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," because the performance deficiency, if left uncorrected, would have the potential to lead to a more significant safety concern. Specifically, the failure to initiate IRs to properly assess the operability of potentially affected equipment could result in the failure to identify inoperable plant equipment. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase I - Initial Screening and Characterization of Findings," Table 4a for the Mitigating Systems Cornerstone and answered "No" to all the Mitigating Systems Cornerstone questions. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system. Therefore, the finding screened as having very low safety significance (Green). The licensee entered this issue in their CAP as IR 1257548 and completed the required shift manager review.

This finding had a cross-cutting aspect in the Operating Experience component of the Problem Identification and Resolution cross-cutting area (P.2(a)) because the licensee's procedures and guidance for OPEX did not systematically collect, evaluate, and

communicate to affected internal stakeholders, in a timely manner, relevant internal and external OPEX.

Enforcement: 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Licensee procedure LS-AA-125, "Corrective Action Program Procedure," Step 4.1.2 stated: "If at any time (e.g., during an investigation, review of a CA closure, review of a previous CR), a SCAQ or CAQ or any question of either current or past Operability/Reportability arises, then initiate an Issue Report (IR) in accordance with LS-AA-120, "Issue Identification and Screening Process."

Contrary to the above, licensee personnel failed to initiate IRs in accordance with LS-AA-125 following the receipt of OPEX 1173590, "Part 21 ENS 46545 ABB Potential Defect Overcurrent Relays," dated February 10, 2011; IR 1198414, "West NSAL 03-07 Supplement 1 Concerning ABB 1E Relays," dated April 6, 2011; and OPEX "10 CFR Part 21 Notification of Deviation – ABB KF Relay Seismic Ratings," dated July 27, 2011, to ensure that immediate actions, operability determination, and reportability concerns were addressed by shift management. Because this violation was of very low safety significance and because it was entered into the licensee's CAP as IR 1257548, this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000454/2011008-02; 0500455/2011008-02: Failure to Initiate Issue Reports)**

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed selected focused area self-assessments (FASAs), check-in self assessments, root cause effectiveness reviews, and Nuclear Oversight (NOS) audits. The inspectors evaluated whether these audits and self-assessments were effectively managed, adequately covered the subject areas, and properly captured identified issues in the CAP. In addition, the inspectors 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. 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 identified an issue in the control of transient combustible material, which led to a comprehensive review of the combustible material control program and generated a number of corrective actions.

c. Findings

No findings were identified.

.4 Assessment of Safety Conscious Work Environment

a. Inspection Scope

The inspectors interviewed selected Byron Station personnel to determine if there were any indications that licensee personnel were reluctant to raise safety concerns, both to their management and the NRC, due to fear of retaliation. In addition, the inspectors discussed the implementation of the Employee Concerns Program (ECP) with the ECP coordinators, and reviewed ECP activities to identify any emergent issues or potential trends. The inspectors also assessed the licensee's Safety Conscious Work Environment (SCWE) through a review of ECP implementing procedures, discussions with ECP coordinators, interviews with personnel from various departments, and reviews of IRs. The licensee's programs to publicize the CAP and ECP programs were also reviewed. The inspectors reviewed the licensee's semi-annual safety culture survey to assess if there were any organizational issues or trends that could impact the licensee's safety performance.

b. Assessment

The inspectors did not identify any issues that suggested conditions were not conducive to the establishment and existence of a SCWE at Byron Station. Licensee staff was aware of and generally familiar with the CAP and other station processes, including the ECP, through which concerns could be raised. 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.

The staff also expressed a willingness to challenge actions or decisions that they believed were unsafe. In fact, several employees had stated that they had written IRs repeatedly for issues that were not corrected to their satisfaction. All employees interviewed noted that any safety issue could be freely communicated to supervision and safety significant issues were being corrected. Although some employees indicated a small degree of frustration related to low level items not being corrected in a timely manner, the inspectors determined that the timeliness of the planned corrective actions for the examples given were commensurate with their safety significance.

A number of employees stated that due to limited resources, they had to prioritize their work and work overtime, which resulted in a delay in the resolution of some of the less significant issues. This feedback aligned the inspectors' observations in the assessment of the corrective action program as discussed above.

c. Findings

No findings were identified.

4OA6 Management Meetings

a. Exit Meeting Summary

On September 7, 2011, 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
B. Barton, Radiation Protection Manager
E. Blondin, Plant Engineering Senior Manager
D. Coltman, Operations Support Manager
D. Gudger, Regulatory Assurance Manager
S. Kerr, Work Management Director
B. Spahr, Maintenance Director
S. Swanson, Nuclear Oversight Manager
P. Woessner, Site Correction Action Program Manager

NRC

E. Duncan, Branch Chief

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000454/2011008-01; 05000455/2011008-01	NCV	Untimely Corrective Action for Previously Identified Non-Cited Violations (Section 4OA2.1.b.3.i)
05000454/2011008-02; 05000455/2011008-02	NCV	Failure to Initiate Issue Reports (Section 4OA2.2.c)

Closed

05000454/2011008-01; 05000455/2011008-01	NCV	Untimely Corrective Action for Previously Identified Non-Cited Violations (Section 4OA2.1.b.3.i)
05000454/2011008-02; 05000455/2011008-02	NCV	Failure to Initiate Issue Reports (Section 4OA2.2.c)

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 100950	CC Pump Min Flow Concerns Not Adequately Addressed by CAs	March 25, 2002
IR 167461	Calculation Errors	July 14, 2003
IR 268375	Mechanical Seals	October 29, 2004
IR 300149	SSDPC SX168 Controlled by Non-SR Thermostat	February 10, 2005
IR 494743	Loss of CRDM Booster Fan Complicates EOP and TS Compliance	May 30, 2006
IR 510234	All 4 WR RCS Cold Leg Temp Channels Failed	July 17, 2006
IR 562375	CDBI Calculation BYR04-016 Assumptions	November 27, 2006
IR 564182	NOS Finding on App J Surveillance Implementation	December 1, 2006
IR 574418	Vortexing Review of CS Additive Tank	January 2, 2007
IR 644073	Need to Determine if Common Cause Failure	June 25, 2007
IR 653093	The AF Tunnel Covers Do Not Meet Expected Safety Factors	July 24, 2007
IR 661984	Unexpected Annunciators and Partial Loss of IA	August 18, 2007
IR 663338	Resolution of 2005 NRC SSDI Unresolved Item on UHS	August 22, 2007
IR 680626	NRC Potential Green Finding and NCV on HUT Level	October 4, 2007
IR 741054	DG Frequency Variation Not Addressed in Calcs	February 26, 2008
IR 753012	1B AFW Pump Oil Leak Resulted in Flames	March 21, 2008
IR 754582	U-2 Loss of Power	March 25, 2008
IR 838568	OPEX Needs Review by Plant and Program Engineering	August 27, 2008
IR 841317	CBDI FASA: AF Diesel Exhaust Calc Issue	November 6, 2008
IR 855717	1VD27Y Damper Found Dropped Down	December 12, 2008

IR 867387	Active Leak Appears to be Body to Bonnet	January 15, 2009
IR 877430	NRC Identified Tornado Missile Protection of DOST Vent Line	February 6, 2009
IR 885124	Probable CCF Due to Down Power for 1RC8037A Leak	February 21, 2009
IR 885186	Engineering Unable to Support CDBI FASA Action Closure	February 2, 2009
IR 913745	Revise 0BRSR 7.c.1-2	August 14, 2009
IR 916586	0A VC Supply Fan Damper Broken	May 6, 2009
IR 916586	0A VC Supply Fan Discharge Damper Linkage is Broken	May 6, 2009
IR 924875	Concern With CC Train Split Due to Postulated Passive Failure	May 28, 2009
IR 933083	PI&R FASA Deficiency 5.1	June 19, 2009
IR 933096	PI&R FASA Deficiency 7.1	June 19, 2009
IR 933712	NRC Concerns with Design of the Diesel Oil Storage Tank Vent	June 22, 2009
IR 936773	Compliance Issues When Purchasing Sealed Sources	June 26, 2009
IR 940534	Probable Dispute of Potential NRC Violation	June 24, 2009
IR 940748	Check-In Deficiency #3: Incorrect Instrument for Leak Test	July 10, 2009
IR 940752	Check-In Deficiency #4: Evaluation for Extent of Condition Not Adequate	July 10, 2009
IR 940755	Check-In Deficiency #5: Source Inventory Documentation Gap	July 10, 2009
IR 940757	Check-In Deficiency #6: Predefine Documentation Incomplete	July 10, 2009
IR 940758	Check-In Deficiency #7: Source Placard has Wrong Activity	July 10, 2009
IR 944525	Informal Benchmarking – Maintenance, M&TE Audit at Kewaunee	July 22, 2009
IR 945746	Lack of Documentation for Some UFSAR Statements	July 24, 2009

IR 947076	Thru Wall Crack on Nuts on 2B SX PP Removed from Plant	July 29, 2009
IR 950082	Radioactive Waste Shipments Characterized Using the Wrong SC	August 5, 2009
IR 950541	Byron 2009 WANO Mid-Cycle Gap - AFI OR.2-1	August 6, 2009
IR 950562	Byron 2009 WANO Mid-Cycle Gap - PD OR.3-1	August 6, 2009
IR 957014	Compliance with NOG-1 Rules for Single Failure Proof Crane	August 24, 2009
IR 957945	NRC Questions on Design Analysis No. 2.4.3 - BYR08-027	August 26, 2009
IR 966184	Compliance with NOG-1 Rules for Single Failure Proof Crane	September 17, 2009
IR 974710	1CV8119 Leaking Out of Weep Hole on Side of Relief	October 5, 2009
IR 974759	1CV8119 Leak Requires Corporate RPM Notification	October 5, 2009
IR 975422	Work Hour Rule Violations - Operations	October 6, 2009
IR 975669	1/2 BOSR ES-R1 and ES-R-2 Methodology Needs Revision	October 6, 2009
IR 975669	1/2BOSR ES-R1 and ES-R2 Methodology Needs to be Reviewed	October 6, 2009
IR 979727	Perform CCA for Byron WANO Mid-Cycle "OR" Issue	October 15, 2009
IR 982412	NRC Finding Documented in PI&R Inspection Report (Scaffold)	October 21, 2009
IR 985151	Draining RH System Without a Clearance Order	October 28, 2009
IR 988981	Potential Non-Conservative DO Tech Spec 3.8.3	November 4, 2009
IR 995845	NRC Finding Documented in 2Q2009 Report - FHB Crane Trolley	November 19, 2009
IR 999645	2DG01KB-C Impeller Upgrade/IEE	November 30, 2009
IR 999861	2B DG SplRe Impeller Test Failure	December 1, 2009
IR 1000198	Conditional Release of 2B DG JW Pump Impeller	December 1, 2009
IR 1000315	2B DG JW Pump Impeller Cracked	December 2, 2009
IR 1010577	NRC NCV Documented in Insp Rept (No PA Barrier Periodic Checks)	December 30, 2009

IR 1021565	NOS ID: Weaknesses in Line Responses to Significant OPEX	January 25, 2010
IR 1025593	NRC Walkdown Questions Potential Hole in Fire Barrier	February 3, 2010
IR 1028506	NOS ID: Inadequate Control of Quality Parts	February 10, 2010
IR 1035940	FME Root Cause Investigation Requested	February 26, 2010
IR 1038795	Procedure Challenge of FME Procedures – Maintenance	March 4, 2010
IR 1040393	NOS ID: Inadequate Fuel Pool FME Controls	March 9, 2010
IR 1046794	1BOA ELECT-7 Entry Due to Water Intrusion in AEER	March 24, 2010
IR 1053700	ANSI Standard Potentially Not Being Met	April 7, 2010
IR 1056779	Valve Stem Spins Free when Valve Fully Open	April 14, 2010
IR 1058304	NRC Identifies Transient Material Inside Containment	April 19, 2010
IR 1060177	Reportability Decision Revised After NRC Feedback	April 22, 2010
IR 1061204	Foreign Material Found in Reactor Cavity	April 25, 2010
IR 1061778	Possible Pressure Sensing Line Pluggage	April 27, 2010
IR 1062519	High Vibration on 0VA02A	April 28, 2010
IR 1063395	Unplanned LCOAR Entry - 0FP03PB	April 29, 2010
IR 1068066	NRC Questioned the Design of SG Lateral Support Shim Pack	May 11, 2010
IR 1070282	Continue VA Fan Problems Requires Causal Analysis	May 17, 2010
IR 1074261	Oiler Vent Line Issue Causing Oil Feed Interruption to Bearings	May 27, 2010
IR 1079729	FASA Deficiency-Incorrect Source Jig Used	June 11, 2010
IR 1079731	FASA Deficiency-Calibration Report Delay from Vendor	June 11, 2010
IR 1079732	FASA Deficiency-Calibration Date Not Correct	June 11, 2010
IR 1080746	Part 21 Needed for 2B DG Failed PT Fuse	June 15, 2010
IR 1082167	M&TE Equipment Not Returned Before Calibration Due Dates	June 18, 2010
IR 1091453	Lost M&TE	July 16, 2010
IR 1093594	Storm Water Runoff Basin Overflows-Unplanned LCOIR Entry	July 23, 2010

IR 1094527	Storm Water Runoff Basin Overflows-Unplanned LCOIR Entry	July 26, 2010
IR 1101382	NOS Identified Independent Inspection Plan Issues	August 13, 2010
IR 1102835	NRC Concerns with Byron ISFSI Pad Structural Qualification	August 18, 2010
IR 1103555	CC Actions Assigned Without Required Support	August 17, 2010
IR 1106850	Hold Point Clarification for Non Shrink Grout Routine Maint	August 27, 2010
IR 1107151	Annulus Chiller Unit Tripped Overnight	August 29, 2010
IR 1110180	1A Station Air Compressor Problems	September 6, 2010
IR 1112263	0A Jockey Fire Pump Shaft Separation	September 12, 2010
IR 1117296	NRC Exited Green NCV for RHUT Analysis	September 24, 2010
IR 1119001	Review Braidwood Potential NCV for RHUT Analysis	September 28, 2010
IR 1134544	1B DG Governor Not Compensated After Oil Change	November 2, 2010
IR 1138019	FME Good Catch in Spent Fuel Pool Area During DCS OPS	November 9, 2010
IR 1139597	Continuation of Root Cause Actions for IR 1107151	November 12, 2010
IR 1147124	NRC GL 08-01 - Missed Opportunity on Review of BWD EC 379707	December 1, 2010
IR 1148711	Potential Licensee ID'd NCV for Lack of CS Vortexing Calc	December 6, 2010
IR 1149417	Inconsistent SX Piping Conf for 1B AF PP Lube Oil Cooler	December 7, 2010
IR 1153873	Division 22 Ventilation Fan Tripped	December 17, 2010
IR 1155831	1FWA-D Pneumatic Pressure Margin	December 26, 2010
IR 1160075	Replace VA Supply/Exhaust Fan Oilers	January 7, 2011
IR 1161844	WR Required To Verify No loop Seals in 0VA02CB Oiler System	January 12, 2011
IR 1167589	Reduced Margin Identified in CSAT Calculation	January 27, 2011
IR 1179083	NOS ID: Deficiencies in Storage and Combustible Commodities	February 23, 2011

IR 1182038	Missed QV Hold Point During SX Linestop Support TWR Build	March 1, 2011
IR 1182295	Tech Spec Bases 3.7.7 at Byron and Braidwood Appears to be Incorrect	March 2, 2011
IR 1184864	NRC Heat Sink Insp Green NCV - Inadequate Instructions	March 8, 2011
IR 1186129	Chainfall Damaging Piping	March 10, 2011
IR 1186130	NOS ID: Scaffold Violates NEIL Requirements	March 10, 2011
IR 1188984	FME Found In West Side Of Cavity	March 17, 2011
IR 1189220	FME Found in Transfer Canal Near Gate Grating	March 18, 2011
IR 1189229	B1R17 CRDM Inspection – Volumetric Ultrasonic Indications	March 18, 2011
IR 1198319	1B AFW Pump Significant Oil Leak from Valve Cover	April 6, 2011
IR 1198414	West NSAL 03-07 Supplement 1 Concerning ABB 1E Relays	April 6, 2011
IR 1204521	Standard Deficiency - SOER 10-2 REC 1B FASA - CAP Timeliness	April 19, 2011
IR 1204746	Increased Temperature Trend on 2B FW Pump INBD Journal Bearing	April 19, 2011
IR 1208878	Site Hydraulic Torque Wrench Calibration Not In Labigator	April 28, 2011
IR 1213429	Byron Design Engineering Owns 32 of the 67 Corrective Actions	May 9, 2011
IR 1214470	1AF004A Failed to Open During Testing	May 11, 2011
IR 1215669	NRC 1Q2011 NCV - Self-Revealed Low Flow to RCFC	May 13, 2011
IR 1218406	2011 NRC MOD 50.59 Inspection - Missing QV Hold Points	May 20, 2011
IR 1225907	M&TE Overdue for Calibration	June 7, 2011
IR 1226616	Engineering Review of CA's	June 9, 2011
IR 1226961	2011 NRC MOD 50.59 Inspection - Missing QV Hold Points	June 9, 2011
IR 1230805	Placing VA Fan At Risk When Changing Out Oilers	June 20, 2011

IR 1233988	Work Order and C/O Tie Delays 0C VA Supply Fan Work Window	June 28, 2011
IR 1239039	Corrective Action Did Not Address Issue	July 12, 2011
IR 1239039	NOS ID: Corrective Action Did Not Address NOS Identified Issue	July 12, 2011
IR 1239157	FASA 1145944 Deficiency 2.1	July 12, 2011
IR 1239157	FASA 1145944 Deficiency 2.1	July 12, 2011
IR 1239162	PI&R FASA Deficiency 3.1	July 12, 2011
IR 1239165	PI&R FASA Deficiency 3.2	July 12, 2011
IR 1239165	PI&R FASA Deficiency 3.2	July 12, 2011
IR 1239169	PI&R FASA Deficiency 3.3	July 12, 2011
IR 1239173	PI&R FASA Deficiency 3.4	July 12, 2011
IR 1239317	PI&R FASA Deficiency 7.1	July 13, 2011
IR 1249717	NRC Mod/50.59 Insp NCV - QV Hold Point Inspection Not Performed	August 10, 2011
IR 1249719	NRC Mod/50.59 Insp NCV - Temp Scaffolds Over 90 Days Old	August 10, 2011
IR 1249721	NRC Mod/50.59 Insp NCV - EDG Fuel Calc Didn't Consider Freq Vari	August 10, 2011
IR 1249731	NRC 2Q2011 NCV - AF Piping Subject to Voiding After Seismic EV	August 10, 2011

Apparent Cause Evaluation

ACE 938581	Unqualified Individuals Assigned to Shift	August 28, 2009
ACE 944177	0VC182Y Damper is Broken	July 21, 2009
ACE 952902	Clearance Performance Indicators Chronically Do Not Meet Expectations	November 5, 2009
ACE 953448	Modification of Scaffold in 1A Diesel Oil Storage Tank Room Without Documentation	October 5, 2009
ACE 977162	Byron Unit 1 Cycle 17 Power Ascension ReMA Critical Parameter Exceeded at Low Reactor Powers	November 19, 2009
ACE 1057786	Unacceptable Surface Indications on a Safety Injection Penetration P-66 Weld	May 27, 2010

ACE 1058304	NRC Identifies Transient Material Inside Containment	May 26, 2010
ACE 1060177	Reportability Decision Revised After NRC Feedback	June 10, 2010
ACE 1062510	0VA02CA Exhaust Fan Inboard Bearing Failure	November 10, 2010
ACE 1065109	2C SG Upper Lateral Support Shim Pack/Bearing Plate Bolting was Found Sheared Off	July 20, 2010
ACE 1070440	Radiation Protection Emergency Response Equipment Out of Calibration	July 8, 2010
ACE 1091242	REM-Ball Source Check Failures - Neutron Shepherd Suspect	August 24, 2010
ACE 1101382	Work Packages Did Not Contain Required Quality Verification (QV) Hold Points	November 24, 2010
ACE 1114313	Security Officer Suffered OSHA/ISAR Injury to Left Knee While Performing a Timeline Drill	November 4, 2010
ACE 1175392	Byron Unit 1 FAC CHECWORKS Model Errors	March 29, 2011

Common Cause Evaluation

CCA 961843	Errors Identified in Vendor Calculations for Byron ISFSI	October 5, 2009
CCA 1016804	2009 ALARA IR Review	March 8, 2010
CCA 1032131	IR's Generated at Byron Station Containing Environmental Concerns	April 22, 2010
CCA 1070589	CCA of Maintenance Planning IRs to Determine Actions Necessary to Arrest Lower Level Issues	June 23, 2010
CCA 1072543	CAP Trending to Evaluate for CCA on ECCS Check Valve	July 22, 2010
CCA 1093619	Site Wide Trending Identifies Potential Trend in Procedure Adherence	September 22, 2010
CCA 1097717	To Identify the Most Significant, Common Problems Associated with the Steam Generator Blowdown (SD) System	September 7, 2010
CCA 1098446	Adverse Trend In Measurement and Testing Equipment (M&TE) Procedure Usage and Adherence	September 20, 2010
CCA 1098446	Adverse Trend in M&TE Procedure Usage and Adherence	September 1, 2010

CCA 1156577	FMS - Personal Responsibility Trend	January 20, 2011
CCA 1215659	Adverse Trend in Later Request for Unescorted Access	June 10, 2011
CCA 1238644	Evaluate Deficiencies Identified During the CAP NOS Audit at Byron Station	August 5, 2011

Audit, Assessment and Self-Assessments

IR 808265	Check-In Self Assessment - SOER Effectiveness Reviews	August 18, 2008
IR 831683	Check-In Self Assessment - NPDES Program	September 18, 2009
IR 842841	Check-in Self Assessment - RP Source Control	November 10, 2008
IR 850915	FASA Self Assessment - Pre-NRC Inspection Modules 71130.04, 71130.09 and Performance Indicators	October 21, 2009
IR 888969	Check-In Self Assessment - Byron Thermography Program	July 9, 2009
IR 940118	Check-In Self Assessment - Chemistry Radiological Environmental Monitoring Program (REMP)	August 31, 2009
IR 981690	Check-In Self Assessment - LS-AA-115 Implementation Assessment	January 27, 2010
IR 1006770	FASA Self Assessment - Radiation Instrumentation Per IP 71124.05	July 8, 2010
IR 1012562	FASA Self Assessment - Appendix J Program Standards Compliance	June 30, 2010
IR 1012611	Check-In Self Assessment - Review of Current and Historical ACMP	July 31, 2010
IR 1012632	FASA Self Assessment - Byron Station FAC (Flow Accelerated Corrosion)	October 14, 2010
IR 1127709	FASA Self Assessment - Security NEI 08-07 Assessment	February 21, 2011
IR 1130832	FASA Self Assessment - PWR Reactivity Management Equipment Reliability	July 15, 2011
IR 1130874	NOS Audit - Corrective Action Programs Audit Report	May 12, 2011
IR 1145944	FASA Self Assessment - Corrective Action Program Preparation for NRC Problem Identification and Resolution Inspection	June 15, 2011

IR 1145944	FASA Self Assessment - Preparation for NRC Problem Identification and Resolution Inspection	June 29, 2011
IR 1149198	Check-In Self Assessment - Byron Station Reactivity Management Performance	January 31, 2011
<u>Miscellaneous</u>		
BYR-56531	Failure Analysis of Casing Nuts from the Byron Station 2B SX Pump	October 15, 2009
BYR-56536	Byron Line 2PS01BB Coupling Weld Leak	July 30, 2009
BYR-67029	Field Inspection of the Byron 1CV8119 Relief Valve	October 16, 2009
BYR-72867	Evaluation of Cracks in a Byron 2B EDG Jacket Cooling Pump Impeller	January 27, 2010
BYR-94741	Evaluation of Skid Plate Mounting Bolts from the Byron 2C Steam Generator Upper Lateral Support	May 25, 2010
BY-EO-CY11	Cycle Topics 11-1	Revision 0
Drawing M-97	Diagram of Diesel Generator Room 1A & 1B Ventilation System	Revision P
Drawing M-65	Diagram of Boric Acid Processing, Sheet 2C	Revision AO
Drawing M-61	Diagram of Safety Injection, Sheet 1B	Revision AX
Drawing M-136	Diagram of Safety Injection, Sheet 1	Revision AY
EC 367824	Add Automatic Drain Valves and Bypass Lines on 12 Service Air and Instrument Air Lines	Revisions 2
EC 368211	Replace Valves 0SA320 and 0SA042 with Full Port Ball Valves	Revisions 0
Op Eval 11-008	Seismic Qualification of ABB 1E Relays for RCP Overcurrent Protection	Revision 0
Op Eval 09-001	Diesel Oil Storage Tank (DOST) and Diesel Generator (DG) Crankcase Ventilation Lines Crimp Verses Break Analysis	Revision 7
Standing Order 09-059	Awareness of Definition of Reactor Coolant System Pressure Boundary	December 23, 2009
Training Request 10-010	NRC Interpretation of Reactor Coolant System Pressure Bound	August 20, 2010

Engineering Policy Memo 2009-03	Improvement in Owners Review	Revision 2
10 CFR 72.212 Evaluation Report		Revision 2
Byron Maintenance (M&TE) Due For Calibration		August 30, 2011 – September 29, 2011
Causing Organization Trend Report		1/2011 - 3/2011
Event Trend Report: Byron Station		1/2011 - 3/2011
Event Trend Report: Operation - Procedure Related		January 2009 - August 2011
Event Trend Report: Security - Procedure Related		1/2009 - 8/2011
Event Trend Report: Engineering - Procedure Related		1/2009 - 8/2011
Event Trend Report: Chemistry - Procedure Related		1/2009 - 8/2011
Event Trend Report: Radiation Protection - Procedure Related		1/2009 - 8/2011
Event Trend Report: Maintenance - Procedure Related		1/2009 - 8/2011
Event Trend Report: Engineering - Procedure Related		1/2009 - 8/2011
Event Trend Report: Byron Station - Procedure Related		1/2009 - 8/2011
Process Trend Report: Byron Station		1/2011 - 3/2011
Plant Health Committee Meeting Handout		August 8, 2011
Operation Department Trend Review		Quarter Ending 6/2010
Operation Department Trend Review		Quarter Ending 9/2010
Operation Department Trend Review		Quarter Ending 12/2010
Operation Department Trend Review		Quarter Ending 3/2011
Operation Performance Summary		Quarter Ending 7/2011
Operation Performance Summary		Quarter Ending 12/2010
Security Department Trend Review		Quarter Ending 6/2010

Security Department Trend Review	Quarter Ending 9/2010
Security Department Trend Review	Quarter Ending 12/2010
Security Department Trend Review	Quarter Ending 3/2011
Semi-Annual Safety Culture Review	July 10, 2009
Semi-Annual Safety Culture Review	February 10, 2010
Semi-Annual Safety Culture Review	July 30, 2010
Semi-Annual Safety Culture Review	January 25, 2011
System Health Report: VA-Auxiliary Building HVAC	Q1-2011
Trending Guide - CAP Process Help	Revision 15

Operating Experience

IR 939664	OE29202 - Large Motor Maintenance Lessons Learned (Columbia)	July 8, 2009
IR 995253	Maintenance OPEX Review – Welding Gas Issue at McGuire	November 18, 2009
IR 995321	Maintenance OPEX Review – Braidwood AFW CAL Left Unattended	November 18, 2009
IR 1046441	Maintenance OPEX Review – Oyster Creek Shorted Motor	March 23, 2010
IR 1109244	OE31554 - 4kV Breaker Failure Due to Improper Lubrication	September 2, 2010
IR 1110739	SOER 10-2 Response	September 8, 2010
IR 1129652	Maintenance OPEX Review – OE 32145 Applies to BYR/BRW	October 22, 2010
IR 1130840	IN 2010-20 Turbine Driven Feed Pump Repetitive Failures	October 26, 2010
IR 1165423	Part 21 ENS 46545 ABB Potential Defect Overcurrent Relay	January 21, 2011
IR 1166492	IN 2010-26 Submerged Electrical Cables	January 25, 2011

IR 1173590	Part 21 ENS46545 ABB Potential Defect Overcurrent Relays	February 10, 2011
IR 1198414	West NSAL 03-07 Supplement 1 Concerning ABB 1E Relay	April 6, 2011

Procedures

0BMSR SX-5	Inspection of River Screen House and Essential Service Water Cooling Tower Basins	Revision 4
0BOA SEC-4	Loss of Instrument Air	Revision 105
1BOA SEC-4	Loss of Instrument Air	Revision 106
2BOA SEC-4	Loss of Instrument Air	Revision 104
AD-AA-101	Processing of Procedures and T&TMs	Revision 23
BFP FH-65	Spent Fuel Cask Site Transportation	Revision 9
CC-AA-103-1003	Owner's Acceptance Review of External Engineering Technical Products	Revision 6
LS-AA-1012	Safety Culture Monitoring	Revision 0
LS-AA-115	Operating Experience	Revision 10
LS-AA-115-1001	Processing of Level 1 OPEX Evaluations	Revision 4
LS-AA-115-1002	Processing of Level 2 OPEX Evaluations	Revision 3
LS-AA-115-1003	Processing of Significance Level 3 OPEX Evaluations	Revision 1
LS-AA-118-1002	Exelon Nuclear Midcycle Assessment	Revision 1
LS-AA-120	Issue Identification and Screening Process	Revision 13
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-125-1004	Effectiveness Review Manual	Revision 5
LS-AA-125-1005	Coding and Analysis 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	Corrective Action Program Procedure	Revision 3
LS-BY-125-1005	Coding and Analysis Manual	Revision 6A

MA-AA-716-006	Control of Lubricants Program	Revision 8
MA-AA-716-008	Foreign Material Exclusion Program	Revision 6
MA-AA-716-010-1103	Fluid Sealing Technology Program	Revision 1
MA-AA-716-040	Control of Portable Measurement and Test Equipment Program	Revision 7
MA-AA-716-060	Compression Fittings Inspection, Installation, Remake and Repair	Revision 2
MA-AA-725-560	Hydramotor Actuator - Model AH91, NH91, and HN92 Preventive Maintenance	Revision 6
MA-AP-734-418	Joy Model 72-36-1770 VA Supply Fan Maintenance	Revision 3
MA-AP-734-419	Joy Model 72-30-1770 VA Exhaust Fan Maintenance	Revision 2
OP-AA-108-115	Operability Determinations (CM-1)	Revision 10
OP-AA-108-115-1001	Operability Evaluation Passport Engineering Change Desktop Guide	Revision 1
OP-AA-108-115-1002	Supplemental Consideration for On-Shift Immediate Operability Determinations (CM-1)	Revision 2
WC-AA-106	Work Screening and Processing	Revision 12

Root Cause Evaluations

RCE 985151	Draining RH System Without a Clearance Order	October 28, 2009
RCE 1035940	Adverse Trend in Byron Station Foreign Material Exclusion (FME) Events	June 1, 2010
RCE 1139610	Potential Non-Conservative Tech Specs for Component Cooling	November 12, 2010
RCE 1189229	B1R17 CRDM Inspection - Volumetric Ultrasonic Indications	June 29, 2011

Issue Reports Generated As a Result of the NRC Inspection

IR 1252952	Previously Identified Equipment Issue Not Given Adequate Priority	August 18, 2011
IR 1253321	Question Asked During NRC PI&R Inspection	August 19, 2011
IR 1253377	Interpretation Issue Identified with Assignment Closure	August 19, 2011

IR 1257444	NRC PI&R Clear Direction is Not Provided in LS-AA-115-1003	August 30, 2011
IR 1257458	NRC PI&R Issues Identified with IR 1198414	August 30, 2011
IR 1257920	NRC PI&R 10 CFR Part 21 Notification of Deviation - ABB KF Relay	August 30, 2011
IR 1258804	NRC PI&R MA-AA-725-560 Procedure References Require Updating	September 2, 2011
IR 1260159	Trending Process Enhancements	September 7, 2011
IR 1261219	Process Improvement – 10CFR21 Notification of Deviation	September 9, 2011
IR 1269928	Potential NCV Identified During NRC PI&R Inspection	September 29, 2011

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
CAP	Corrective Action Program
CAQ	Condition Adverse to Quality
CFR	Code of Federal Regulations
DOST	Diesel Oil Storage Tank
EDG	Emergency Diesel Generator
ECP	Employee Concerns Program
FASA	Focused Area Self Assessment
IEMA	Illinois Emergency Management Agency
IMC	Inspection Manual Chapter
IR	Inspection Report
IR	Issue Report
MRC	Management Review Committee
M&TE	Measurement & Test Equipment
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
NOS	Nuclear Oversight
OPEX	Operating Experience
PI&R	Problem Identification & Resolution
RHUT	Recycle Holdup Tank
ROP	Reactor Oversight Process
SCAQ	Significant Condition Adverse to Quality
SCWE	Safety Conscious Work Environment
SDP	Significance Determination Process
TS	Technical Specifications
VA	Auxiliary Building Ventilation

M. Pacilio

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Sincerely,

/RA/

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

Docket Nos. 50-454; 50-455
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Letter to M. Pacilio from E. Duncan dated October 17, 2011.

SUBJECT: BYRON STATION, UNIT 1 & 2 NRC PROBLEM IDENTIFICATION AND
RESOLUTION INSPECTION REPORT 05000454/2011008; 0500455/2011008

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