

April 1, 2008

EA-08-046

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

SUBJECT: BYRON STATION – FINAL SIGNIFICANCE DETERMINATION FOR A WHITE FINDING AND NOTICE OF VIOLATION; NRC INSPECTION REPORT NO. 05000454/2007009(DRS) AND 05000455/2007009(DRS)

Dear Mr. Pardee:

The purpose of this letter is to provide you the final results of our significance determination of the preliminary White finding identified in the subject inspection report. The inspection finding was assessed using the Significance Determination Process and was preliminarily characterized as White, a finding with low to moderate increased importance to safety that may require additional NRC inspections. This White finding involved degradation of the essential service water system riser piping at the cooling tower basin, and the subsequent dual unit shutdown on October 19, 2007, to correct the problem. The performance deficiencies associated with this White finding directly contributed to the length of time the degraded riser pipes remained in service, and contributed to the OC riser pipe failure while in service.

In a telephone conversation with Mr. David Hills of the NRC, Region III, on February 27, 2008, Mr. William Grunman of your staff indicated that Exelon did not contest the characterization of the risk significance of this finding and that you declined your opportunity to discuss this issue in a Regulatory Conference or to provide a written response.

After considering the information developed during the inspection, the NRC has concluded that the inspection finding is appropriately characterized as White, a finding with low to moderate increased importance to safety that may require additional NRC inspections. The subject inspection report provided the detailed information about the assumptions used in the Phase 3 Significance Determination Process analysis.

You have 30 calendar days from the date of this letter to appeal the staff's determination of significance for the identified White finding. Such appeals will be considered to have merit only if they meet the criteria given in the NRC Inspection Manual Chapter 0609, Attachment 2.

The NRC has also determined that the finding is associated with two violations of NRC requirements, as cited in the attached Notice of Violation (Notice). Specifically, the NRC determined that a violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions" occurred due to your staff's failure to take timely corrective actions after the identification of extensive corrosion on essential service water riser pipes. Additionally, a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" occurred due to your staff's failure to verify the adequacy of the methodology and design inputs in calculations that supported your staff's

decision to accept three degraded essential service water riser pipes for continued service. The circumstances surrounding the violations were described in detail in the subject inspection report. In accordance with the NRC Enforcement Policy, the Notice is considered escalated enforcement action because it is associated with a White finding.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response.

Because plant performance for this issue has been determined to be in the regulatory response band, we will use the NRC Action Matrix to determine the most appropriate NRC response for this event. We will notify you, by separate correspondence, of that determination.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

***/RA by Mark A. Satorius Acting for/***

James L. Caldwell  
Regional Administrator

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

Enclosure:  
Notice of Violation

cc w/encl:     Site Vice President - Byron Station  
                  Plant Manager - Byron Station  
                  Regulatory Assurance Manager - Byron Station  
                  Chief Operating Officer and Senior Vice President  
                  Senior Vice President - Midwest Operations  
                  Senior Vice President - Operations Support  
                  Vice President - Licensing and Regulatory Affairs  
                  Director - Licensing and Regulatory Affairs  
                  Manager Licensing - Braidwood, Byron, and LaSalle  
                  Associate General Counsel  
                  Document Control Desk - Licensing  
                  Assistant Attorney General  
                  Illinois Emergency Management Agency  
                  J. Klinger, State Liaison Officer, State of Illinois  
                  P. Schmidt, State Liaison Officer, State of Wisconsin  
                  Chairman, Illinois Commerce Commission  
                  B. Quigley, Byron Station

staff's decision to accept three degraded essential service water riser pipes for continued service. The circumstances surrounding the violations were described in detail in the subject inspection report. In accordance with the NRC Enforcement Policy, the Notice is considered escalated enforcement action because it is associated with a White finding.

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Sincerely,  
**/RA by Mark A. Satorius Acting for/**  
 James L. Caldwell  
 Regional Administrator

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

Enclosure: Notice of Violation

cc w/encl: Site Vice President - Byron Station  
 Plant Manager - Byron Station  
 Regulatory Assurance Manager - Byron Station  
 Chief Operating Officer and Senior Vice President  
 Senior Vice President - Midwest Operations  
 Senior Vice President - Operations Support  
 Vice President - Licensing and Regulatory Affairs  
 Director - Licensing and Regulatory Affairs  
 Manager Licensing - Braidwood, Byron, and LaSalle  
 Associate General Counsel  
 Document Control Desk - Licensing  
 Assistant Attorney General  
 Illinois Emergency Management Agency  
 J. Klinger, State Liaison Officer, State of Illinois  
 P. Schmidt, State Liaison Officer, State of Wisconsin  
 Chairman, Illinois Commerce Commission  
 B. Quigley, Byron Station

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DATE	3/27/08		3/30/08		03/26/08		3/31/08		4/01/08

**OFFICIAL RECORD COPY**

1 OE concurrence received via E-mail from N. Hilton on March 26, 2008.

Letter from to Charles G. Pardee from James L. Caldwell dated April 1, 2008

SUBJECT: FINAL SIGNIFICANCE DETERMINATION FOR A WHITE FINDING AND  
NOTICE OF VIOLATION; NRC INSPECTION REPORT NO.  
05000454/2007009(DRS) AND 05000455/2007009(DRS); BYRON STATION

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## NOTICE OF VIOLATION

Exelon Generating Company  
Byron Station

Docket Nos. 50-454; 50-455  
License Nos. NPF-37; NPF-66  
EA-08-046

During an NRC inspection conducted from October 23, 2007, to February 14, 2008, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

1. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," requires in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected.

Contrary to the above:

- a. From May 17, 2007, to October 20, 2007, the licensee failed to assure that a condition adverse to quality was promptly corrected. Specifically, on May 17, 2007, the licensee identified in Action Request (AR) 00630679 that there was significant corrosion of the 0A essential service water riser pipe. However, as of October 20, 2007, no corrective actions had been taken to correct this condition.
- b. From November 30, 2006, to October 20, 2007, the licensee failed to assure that a condition adverse to quality was promptly corrected. Specifically, on November 30, 2006, the licensee identified in AR 00563914 and AR 00563907 that there was significant corrosion of the 0B essential service water riser pipe. However, as of October 20, 2007, no corrective actions had been taken to correct this condition.
- c. From March 5, 2007, to October 20, 2007, the licensee failed to assure that a condition adverse to quality was promptly corrected. Specifically, on March 5, 2007, the licensee identified in AR 00599643 that there was significant corrosion of the 0C essential service water riser pipe and the corroded condition had degraded from a May 2006 inspection. However, as of October 20, 2007, no corrective actions had been taken to correct this condition.
- d. From October 16, 2006, to October 20, 2007, the licensee failed to assure that a condition adverse to quality was promptly corrected. Specifically, on October 16, 2006, the licensee identified in AR 00544803 that there was significant corrosion of the 0D essential service water riser pipe. However, as of October 20, 2007, no corrective actions had been taken to correct this condition.
- e. From June 14, 2007, to October 20, 2007, the licensee failed to assure that a condition adverse to quality was promptly corrected. Specifically, on June 14, 2007, the licensee identified in ultrasonic test report 2007-005 and AR 00640363 that there

was significant corrosion of the 0E essential service water riser pipe. However, as of October 20, 2007, no corrective actions had been taken to correct this condition.

- f. From May 17, 2007, to October 20, 2007, the licensee failed to assure that a condition adverse to quality was promptly corrected. Specifically, on May 17, 2007, the licensee identified in AR 00630679 and again on June 5, 2007, in AR 00637335, that there was significant corrosion on all essential service water riser pipes (including the 0F and 0G essential service water riser pipes). However, as of October 20, 2007, no corrective actions had been taken to correct this condition.
  - g. From June 4, 2007, to October 20, 2007, the licensee failed to assure that a condition adverse to quality was promptly corrected. Specifically, on June 4, 2007, the licensee identified in AR 00636745 that there was significant corrosion of the 0H essential service water riser pipe. However, as of October 20, 2007, no corrective actions had been taken to correct this condition.
2. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that design control measures provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

Contrary to the above:

- a. On July 11, 2007, the licensee's design control measures failed to verify the adequacy of the design of the degraded 0E essential service water riser pipe, in that the methodology and design inputs used did not include significant factors (e.g. thermal stress, compressive loads (buckling) and functional capability) which affected the structural integrity of this degraded riser pipe. Specifically, as documented in Engineering Change 366395 "Nonconformance Evaluation for Line 0SX97AE-24 Near Valve 0SX163E," the licensee failed to: (1) check the thermal stress in accordance with Equations 10 and 11 from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (the Code) 1977 Edition, Section III, Division 1 Subsection ND-3600; (2) evaluate the compressive (buckling) loads present within the thinned essential service water riser pipe wall; and (3) check the functional capability in accordance with site procedures that implemented Updated Final Safety Analysis Report Section 3.9.3.1.3 requirements for Class 2 and 3 piping. Consequently, the licensee incorrectly concluded that the minimum pipe wall thickness was sufficient to meet the Code allowable stress levels. As a result, the degraded 0E essential service water riser was left in service until October 20, 2007.
- b. On October 12, 2007, and October 17, 2007, the licensee's design control measures failed to verify the adequacy of the design of the degraded 0H and 0B essential service water riser pipes, in that, the methodology and design inputs used did not apply an appropriate allowable stress value, and did not account for compressive stresses. Specifically, as documented in Engineering Change 367754 "OP EVAL 07-009, SXCT Riser Piping Below Minimum Wall Thickness" and AR 00 685955, the licensee failed to; apply the lower allowable stress ( $S_h$ ) values applicable to Class 3 piping and failed to evaluate the compressive

(buckling) loads present within the thinned essential service water riser pipe wall. Consequently, the licensee incorrectly concluded that the pipe wall thicknesses were sufficient to meet Code allowable stress levels. The degraded 0H and 0B essential service water risers were left in service until October 20, 2007.

These violations are associated with a White Significance Determination Process finding.

Pursuant to the provisions of 10 CFR 2.201, Exelon Generating Company is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region III, and a copy to the NRC Resident Inspector at the Byron facility, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation; EA-08-046" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid further violations; and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an Order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 1<sup>st</sup> day of April 2008