July 29, 2005

Mr. Barry Quigley
3512 Louisiana
Rockford, IL 61108

Dear Mr. Quigley

Your March 2, 2005, petition addressed to Mr. Luis Reyes, Executive Director for Operations at the Nuclear Regulatory Commission (NRC), has been reviewed by the NRC staff pursuant to Title 10 of the *Code of Federal Regulations*, Section 2.206 of the Commission's regulations. The NRC staff's proposed, unsigned, Director's Decision (DD) on the petition is enclosed. Please provide comments if you believe any portions of the DD contain errors or any issues that have not been fully addressed. The NRC staff is making a similar request of the licensee. The NRC staff will then review and consider any comments in the final version of the DD. You will have no further opportunity to comment.

The proposed DD references supporting information that is available on the Agencywide Document Access and Management System (ADAMS) and is also available for inspection at the NRC's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland, 20850. Publicly available records will be accessible from the ADAMS Public Electronic Reading Room on the NRC Web site at <http://www.nrc.gov>.

Please provide your comments within 15 days of the date of this letter.

Sincerely,

***/RA/***

Ledyard B. Marsh, Director
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. STN 50-454

Enclosure: Proposed Director's Decision

cc w/encl: See next page

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**ADAMS Accession Nos.: ML050680255 - Incoming**
**ML051940352 - Response**
**ML051940361 - Package Nrr-106**

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Byron Station Units 1 and 2

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DD-05-XX

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

J. E. Dyer, Director

| | | |
|---|---|---|
| In the Matter of | ) | Docket No. STN 50-454 |
| | ) | |
| Exelon Generation Company, LLC | ) | License No. NPF-37 |
| | ) | |
| | ) | |
| (Byron Station, Unit 1) | ) | |
| | ) | |

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PROPOSED DIRECTOR'S DECISION UNDER 10 CFR 2.206

I. Introduction

By electronic mail dated March 2, 2005, addressed to Mr. Luis A. Reyes, Executive Director for Operations at the U.S. Nuclear Regulatory Commission, Mr. Barry Quigley filed a petition pursuant to Title 10 of the *Code of Federal Regulations*, Section 2.206 (Agencywide Document Access and Management System (ADAMS) Accession No. ML050680255). The petitioner requests that the U.S. Nuclear Regulatory Commission (NRC) take enforcement action against Exelon Nuclear's (Exelon's, the licensee's) Byron Station for failure to comply with 10 CFR Part 50, Appendix B, Criterion XVI. Specifically, the petitioner stated that the 1C cold leg loop stop isolation valve (LSIV) (1RC8002C) has been broken for at least six years and has not been repaired. The basis for the request is that LSIV 1RC8002C can be difficult to close, to the point of protective features of the motor actuating. The petitioner indicated that the failure mechanism is metal-to-metal contact between the valve disc and a misaligned valve guide which introduces debris into the reactor coolant system.

ENCLOSURE

On March 3, 2005, the Office of Nuclear Reactor Regulation (NRR) Petition Review Board (PRB) first met to discuss the petition. On March 4, 2005, the petitioner provided additional clarifying information during a conference call with the PRB. The conference call was recorded; a transcript is publically available in ADAMS Accession No. ML050870619. Subsequent information was provided by the licensee in ADAMS Accession Nos. ML051670196, ML051670192, ML051660544, ML051660534, ML051660541, ML051660527, and ML051660529. In addition, a public meeting was held in the NRC Region III offices on March 21, 2005; a summary of the meeting is available in ADAMS Accession No. ML050820530. Following an internal PRB meeting on March 22, 2005, NRC sent the petitioner an acknowledgment letter, dated April 5, 2005 (ADAMS Accession No. ML050870616). Although NRC concluded that it did not have a basis for taking immediate action, NRC decided that the issue should be reviewed for potential enforcement action under the 10 CFR 2.206 process. In support of the ongoing review, the licensee responded on May 27, 2005, (ADAMS Accession No. ML051590148) to the NRC's Request for Additional Information dated May 4, 2005 (ADAMS Accession No. ML050970118).

All referenced documents are available in ADAMS for inspection at the NRC's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible from the ADAMS Public Electronic Reading Room on the NRC Web site <http://www.nrc.gov>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff by telephone at 1-800-397-4209, 301-415-4737, or by e-mail to pdr@nrc.gov.

## II. Discussion

The LSIVs facilitate repair and maintenance activities on the steam generators during plant outages. As such, the LSIVs do not perform a safety function. However, the malfunction of the valves creates a potential safety concern. Valve degradation could result in a loose part being added to the reactor coolant system (RCS). For example, the slippage of a valve guide out of the groove in the valve body due to a pin or block failure, a broken valve guide (which has occurred within the industry), or improper installation of the blocks at the bottom of the valve guides could contribute to debris being generated within the RCS. In addition, deferring valve maintenance for 1RC8002C could have potential impact on Updated Final Safety Analysis Report (UFSAR) accident analysis if (a) the valve disc separated and rapidly stopped RCS flow if both guides failed or (b) a large loose part from the LSIV was present in the reactor vessel during an RCS hot leg loss-of-coolant accident.

NRC staff review focused on whether 1RC8002C was degraded to a point where a loose part (e.g., a piece of valve guide) could migrate to the reactor vessel. The licensee and staff's analyses of the torque switch settings for 1RC8002C indicated that the thrust forces were unlikely to cause the valve guides to yield or break. During the most recent refueling outage, the licensee was able to fully close 1RC8002C indicating that the valve guide had not slipped onto the valve seat. The staff determined that the valve guide cannot exit the valve in one piece (i.e., it must be broken into shorter pieces first) because of the length of the valve guide and its geometric relation to the valve disc when the valve is open. Any plant that had the valve guides break and migrate into the RCS or slip onto the valve seat did not have the same retaining blocks as Byron Station, Unit 1. Therefore, a key issue was whether the valve blocks were still in position in 1RC8002C. Although the licensee did not inspect the blocks in this past outage, it did perform its 10-year inservice inspection of the reactor vessel when the core was removed. The licensee inspected for loose parts in the vessel and found no loose parts that may have come from the LSIV. As a result, NRC staff finds that the Byron Station, Unit 1 RCS

cold leg LSIV 1RC8002C is unlikely to be degraded to a condition where the valve guide, or a portion of the valve guide, can loosen and migrate to the reactor vessel during normal plant operation. Nevertheless, the staff considered the potential for the release of loose parts into the RCS at Byron Station, Unit 1.

In its May 27, 2005, submittal, the licensee (1) discussed the detection and alerting system that would enable plant personnel to identify the presence of a large loose part and (2) the procedures to be used to identify and respond to a loose part. Based on a review of the information provided, the NRC staff concludes that the licensee's loose parts monitoring provision would detect, alarm, and help locate and identify large loose parts. Further, the staff considers it unlikely that a large loose part would be generated coincident with a loss of coolant accident of sufficient size to cause the loose part to become an aggravating factor.

Although small loose parts may be more difficult to detect, they are less likely to cause an immediate safety problem than large loose parts. While considering loose parts, NRC staff postulated two specific situations: (1) a loose part obstructing the chemical and volume control system letdown line from the RCS, and (2) a loose part obstructing the pressurizer spray. In its May 27, 2005, submittal, the licensee addressed these two situations through reference to Section 5.4 of the Byron UFSAR which discusses compliance with Reactor Systems Branch (RSB) Branch Technical Position RSB 5-1, "Design Requirements of the Residual Heat Removal System," attached to Section 5.4.7 of the NRC Standard Review Plan (NUREG-0800). RSB 5-1 specifies shutdown requirements for light water reactors. Section 5.4 of the Byron UFSAR shows that Byron has the capability to transition from normal operating conditions to a cold shutdown under a natural circulation scenario without pressurizer spray with limited functional capability including a loss of RCS letdown. NRC reported its acceptance of this analysis in Supplement 2 to NUREG-0786, "Safety Evaluation Report Related to the Operation of Byron Station, Units 1 and 2."

In the March 21, 2005, public meeting Exelon discussed its long-term plans for addressing the 1RC8002C performance issues. First, Exelon noted that a rigging structure needed to perform the valve repair was constructed during the past Byron Station, Unit 1 refueling outage. Second, Exelon stated that a contingency repair plan for 1RC8002C would be prepared for the next Byron Station, Unit 1 refueling outage. Third, Exelon stated that it was evaluating enhanced valve diagnostic activities for the next Byron Station, Unit 1 refueling outage. The licensee also noted that it is preparing, with the help of the vendor, a formal decision tree with specific criteria to determine the need for repair of 1RC8002C. In its May 27, 2005, letter, Exelon stated that it is developing a long-term plan that will identify any additional diagnostic testing or inspection to be performed to assess LSIV performance during future outages. The commitment to develop a plan was entered into the Corrective Action Program with a completion date of September 1, 2005. In addition, the staff notes that due to difficulties previously encountered with 1RC80002C closure, the licensee had entered this condition into its Corrective Action Program in March 2002.

Details relating to NRC staff's consideration and conclusions may be found at ADAMS Accession No. ML051890369.

III. Conclusion

Considering the past performance of the 1RC8002C valve, the NRC believes that the petitioner raised concerns that needed to be addressed on how 1RC8002C performance could affect plant safety. In its letter of April 5, 2005, the NRC informed the petitioner that while it did not have a basis for taking immediate enforcement action, the NRC decided to accept the petition for review on the request for enforcement action for failure to comply with 10 CFR Part 50, Appendix B, Criterion XVI.

In addressing whether any safety concerns exist regarding operation of Byron Station, Unit 1 in light of the past performance of 1RC8002C, NRC staff considered the previous

information provided by the licensee and the additional information in its submittal dated May 27, 2005. The staff concludes that the licensee adequately justified the structural integrity of the valve guides in 1RC8002C. With respect to the licensee's loose parts monitoring system and procedures, NRC staff concludes that:

1. Large loose parts from the Byron Station, Unit 1 cold leg LSIVs have an acceptably low potential of occurrence.
2. The licensee's loose parts monitoring provisions would detect, alarm, and help locate and identify large loose parts, including loose parts from LSIV guides.
3. The licensee has provisions to locate, identify, and respond to both large and small loose parts, including LSIV loose parts.
4. Because the licensee complies with NRC Staff Position RSB 5-1, NRC staff is assured that the two LSIV loose-part scenarios postulated for obstruction of the chemical and volume control system letdown line and for obstruction of the pressurizer spray will not prevent shutdown of Byron Station, Unit 1.

Exelon has taken actions to assess and develop corrective actions with respect to 1RC8002C performance. Development of long-term corrective actions are included in the Corrective Action Program at the Byron site. The NRC has concluded that in taking the actions as stated earlier, the licensee is in compliance with the regulations. The NRC does not have a basis for pursuing enforcement action for failure to comply with 10 CFR Part 50, Appendix B, Criterion XVI. Therefore the requested action to take enforcement action against Exelon pursuant to 10 CFR Part 50, Appendix B, Criterion XVI is denied.

With regard to the petitioner's concerns that excessive emphasis on dose reduction is compromising safety, NRC licensees are responsible for assuring that maintenance activities for structures, systems, and components are conducted in a manner sufficient to provide assurance that they are capable of performing their intended functions. Licensees are also

required to develop a radiation protection program to achieve occupational doses and doses to members of the public that are as low as reasonably achievable (ALARA). However, nothing in the ALARA requirement may be construed as limiting the actions that may be necessary to protect health and safety. In this particular instance, deferment of maintenance repairs for ALARA consideration is a decision that does not conflict with NRC's regulations and is within the area of responsibility of the licensee. There is a low probability of valve degradation to the point of adding loose parts to the RCS, the LSIV does not provide a safety function, and the licensee has a loose parts monitoring and retrieval system.

As provided in 10 CFR 2.206(c), a copy of this director's decision will be filed with the Secretary of the Commission for the Commission to review. As provided for by this regulation, the decision will constitute the final action of the Commission 25 days after the date of the decision unless the Commission, on its own motion, institutes a review of the decision within that time.

Dated at Rockville, Maryland, this 29th day of July 2005.

FOR THE NUCLEAR REGULATORY COMMISSION

**- PROPOSED - SIGNATURE NOT REQUIRED -**

J. E. Dyer, Director
Office of Nuclear Reactor Regulation