Exelon Generation
4300 Winfield Road
Warrenville, IL 60555

www.exeloncorp.com

Exelon SM
Nuclear

RS-07-128

September 17, 2007

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: Additional Information Supporting Second Ten-Year Interval Inservice Inspection Relief Requests

References:
1. Letter from D. M. Hoots (Exelon Generation Company, LLC) to U. S. NRC, "Inservice Inspection Program Second Interval Relief Requests I2R-21, I2R-22, I2R-23, I2R-25 and I2R-53," dated January 12, 2007
2. Letter from R. F. Kuntz (U. S. NRC) to C. M. Crane (Exelon Generation Company, LLC), "Byron Station, Unit Nos. 1 and 2 – Request for Additional Information Related to Second Ten-Year Interval Relief Requests (TAC Nos. MD4097, MD4098, MD4099, MD4100, MD4101, MD4102, MD4103, MD4104, MD4105, and MD4106)," dated August 17, 2007

In Reference 1, Exelon Generation Company, LLC (EGC) submitted requests for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," for the second inservice inspection interval for Byron Station, Units 1 and 2. The NRC requested additional information to complete review of the requests for relief in Reference 2. In response to this request, EGC is providing the attached information.

bcc: NRC Project Manager, Byron Station
Site Vice President – Byron Station
Director – Licensing
Manager, Licensing – Byron
Regulatory Assurance Manager – Byron Station
Exelon Document Control Desk – Licensing
Ken Nicely
Hien Do
Robert McBride
Alison Mackellar
Joseph Langan

B/1

There are no regulatory commitments contained in this letter. Should you have any questions related to this letter, please contact Mr. Kenneth M. Nicely at (630) 657-2803.

Respectfully,

Patrick R. Simpson
Manager – Licensing

Attachment: Response to Request for Additional Information

ATTACHMENT
Response to Request for Additional Information

NRC Request I2R-21-1

RR I2R-21 did not indicate whether the limited scope surface examination of the seismic lug welds provided any indication of the presence of unacceptable flaws or conditions in accordance with the acceptance criteria of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Article IWB-3000. Therefore, the Nuclear Regulatory Commission (NRC) staff requests that you discuss whether the limited scope surface examination of these welds provided any indication of the presence of flaws or other relevant conditions that were determined to be unacceptable according to the acceptance criteria of the ASME Code, Section XI, Article IWB-3000.

Response

During the Fall 2005 refueling outage (i.e., B2R12), the examination of pressurizer seismic lug PSL-1 revealed aligned linear indications near the toe of the weld closest to the pressurizer vessel. The lengths of the two indications detected were 0.2" and 0.8", with a separation distance of 0.9" between the indications. These two indications did not require grouping into a single indication, based on Subarticle IWA-3400, "Linear Flaws Detected by Surface or Volumetric Examinations," paragraph (a). Using the acceptance standard in Table IWB-3510-3, "Allowable Linear Flaws," the 0.2" linear indication was determined to be acceptable. However, for the 0.8" linear indication, the length divided by the nominal vessel thickness (i.e., 4.0") was calculated to be 20% and exceeded the acceptance standard of 10.4%. The flaws were determined to be fabrication defects, and not service induced. The fabrication examination method was magnetic particle (MT), using the prod technique, and did not record the shallow surface indications. These indications were evaluated in accordance with the ASME Code Section XI flaw evaluation guidelines. Flaw evaluation charts were developed for both outside axial and circumferential surface flaws to determine the acceptability of the as-found indications. It was concluded that ample margin exists for the linear indication of concern and that no repair was necessary for an operational period of 30 years. The flaw evaluation report associated with these indications was submitted to the NRC in Reference 1.

NRC Request I2R-21-2

The NRC staff requests that you discuss the extent to which the seismic lug welds were examined during the first ISI interval and the preservice exam, including the percentage of credible surface examination coverage that was achieved during these previous examinations. Discuss any relevant conditions that were found during these previous examinations.

Response

The Preservice Inspection (PSI) program was based on ASME Code, Section XI, 1977 Edition through Summer 1978 Addenda. Under these code requirements, it was determined that a PSI examination was not applicable to the pressurizer seismic lug welds.

During the first Inservice Inspection (ISI) interval, the liquid penetrant (PT) examination achieved an estimated 21% coverage for Unit 1 and 20% for Unit 2. The Unit 1 examination was able to

partially access lugs 1, 2, and 3. The Unit 2 examination accessed lugs 3 and 4 only. None of the limited examinations in the first ISI interval resulted in recordable indications.

NRC Request I2R-21-3

The NRC staff notes that a similar request was authorized for Braidwood Station, Units 1 and 2 on January 6, 2000. However, the authorization of this request was granted with the understanding that the licensee would perform a VT-1 visual examination of the accessible areas in the vicinity of the seismic weld lugs during the forthcoming ISI interval. Please discuss whether a VT-1 visual examination has been or will be performed for the accessible areas of the seismic lugs.

Response

For the third ISI interval, Exelon Generation Company, LLC (EGC) intends to perform a best effort surface examination (i.e., liquid penetrant) on those portions of the lugs that are inspectable when the removable insulation panels are removed. In addition, in conjunction with this surface examination, EGC intends to perform a VT-1 visual examination of the upper surfaces of the three accessible lugs.

NRC Request I2R-22-1

Please indicate the percentage of credible surface examination coverage that was achieved during the examination of the accessible welded attachments located on the exposed outside surface of the containment penetration. If less than essentially 100 percent coverage was achieved for any of these welds, please provide supplemental information justifying why compliance with the ASME Code, Section XI requirements for essentially 100 percent surface examination coverage of these welds was impractical.

Response

The percentage of surface examination coverage achieved during the examination of the accessible welded attachments on the exterior surface was essentially 100%, which is defined in ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and 2 Welds," as greater than 90%.

NRC Request I2R-22-2

RR I2R-22 did not indicate whether the surface examination of the accessible attachment welds provided any indication of the presence of unacceptable flaws or conditions in accordance with the acceptance criteria of the ASME Code, Section XI, Article IWC-3000. Therefore, the NRC staff requests that you discuss whether the surface examination of these welds provided any indication of the presence of flaws or other relevant conditions that were determined to be unacceptable according to the acceptance criteria of the ASME Code, Section XI, Article IWC-3000.

Response

None of the second ISI interval examinations resulted in recordable indications.

NRC Request I2R-23-1

RR I2R-23 did not indicate whether the limited scope volumetric examination of the specified pressurizer nozzle-to-vessel welds provided any indication of the presence of unacceptable flaws or conditions in accordance with the acceptance criteria of the ASME Code, Section XI, Article IWB-3000. Therefore, the NRC staff requests that you discuss whether the limited scope volumetric examination of these welds provided any indication of the presence of flaws or other relevant conditions that were determined to be unacceptable according to the acceptance criteria of the ASME Code, Section XI, Article IWB-3000.

Response

None of the second ISI interval examinations resulted in recordable indications.

NRC Request I2R-23-2

The NRC staff requests that you discuss the extent to which the specified pressurizer nozzle-to-vessel welds were examined during the first ISI interval and the preservice exam, including the percentage of credible surface examination coverage that was achieved during these previous examinations. Discuss any relevant conditions that were found during these previous examinations.

Response

Byron Station adopted ASME Code Case N-460 in the third period of the first ISI interval. Examinations performed prior to the adoption of ASME Code Case N-460 do not have documented coverage percentages. Rather, the examiner was only required to identify obstructions or limitations and record them on the examination report.

The subject examinations are governed by ASME Code Section V Article 4, not ASME Code Section XI Appendix VIII. Although coverage percentages were not documented for examinations performed prior to the adoption of ASME Code Case N-460, the percentages obtained were likely similar to those obtained in the second ISI interval. This is based on the examination techniques remaining essentially unchanged from the PSI program through the second ISI interval. Surface examination methods are not specified in ASME Section XI for these components.

During the Fall 2006 refueling outage, four of the subject pressurizer nozzles were examined. The calculated coverage for nozzles PN-02, PN-03, PN-05, and PN-06 were 76.9%, 77.2%, 68.2%, and 76.8%, respectively.

The Unit 1 nozzle 1RY01S PN-06 had a spot indication at 40% amplitude during the PSI examinations. In the first ISI interval examination, this indication was recorded at 50%

amplitude (i.e., the minimum ISI recordable level). During the second ISI interval examination, the examination signal did not achieve the minimum recording level and the indication was noted for information on the report as "seen below recording levels." No other indications were recorded during these examinations. The examination performed during the third ISI interval did not record this indication.

NRC Request I2R-25-1

RR I2R-25 did not indicate whether the limited scope volumetric examination of the reactor vessel head-to-flange weld provided any indication of the presence of unacceptable flaws or conditions in accordance with the acceptance criteria of the ASME Code, Section XI, Article IWB-3000. Therefore, the NRC staff requests that you discuss whether the limited scope volumetric examination of this weld provided any indication of the presence of flaws or other relevant conditions that were determined to be unacceptable according to the acceptance criteria of the ASME Code, Section XI, Article IWB-3000.

Response

None of the second ISI interval examinations resulted in recordable indications.

NRC Request I2R-53-1

RR I2R-53 did not indicate whether the limited scope volumetric examination of the residual heat removal heat exchanger (RHRHX) shell-to-flange weld provided any indication of the presence of unacceptable flaws or conditions in accordance with the acceptance criteria of the ASME Code, Section XI, Article IWC-3000. Therefore, the NRC staff requests that you discuss whether the limited scope volumetric examination of this weld provided any indication of the presence of flaws or other relevant conditions that were determined to be unacceptable according to the acceptance criteria of the ASME Code, Section XI, Article IWC-3000.

Response

No unacceptable indications were identified during the second ISI interval examinations.

NRC Request I2R-53-2

The NRC staff requests that you discuss the extent to which the RHRHX shell-to-flange weld was examined during the first ISI interval and the preservice exam, including the percentage of credible volumetric examination coverage that was achieved during these previous examinations. Discuss any relevant conditions that were found during these previous examinations.

Response

As discussed above, examinations performed prior to the adoption of ASME Code Case N-460 do not have documented coverage percentages. Rather, the examiner was only required to identify obstructions or limitations and record them on the examination report.

The subject examinations are governed by ASME Code Section V Article 4, not ASME Code Section XI Appendix VIII. Although coverage percentages were not documented for examinations performed prior to the adoption of ASME Code Case N-460, the percentages obtained were likely similar to those obtained in the second ISI interval. This is based on the examination techniques remaining essentially unchanged from the PSI program through the second ISI interval.

For Unit 1, no relevant indications were identified during the PSI and first ISI interval examinations. In the second ISI interval, a small subsurface planar flaw was found that is within the acceptance standards of Article IWC-3000, "Acceptance Standards." This weld has subsequently been examined during the third ISI interval and no change in indication dimensions was noted. The coverage obtained was conservatively estimated at 50%.

For Unit 2, a rejectable indication was found during the PSI examination. This area was repaired and reexamined with no relevant indications seen in the repair area. No additional relevant indications have been identified during the PSI, first ISI interval, and second ISI interval examinations.

Reference

1. Letter from D. Hoots (Exelon Generation Company, LLC) to U. S. NRC, "Submittal of Analytical Evaluation of Pressurizer Seismic Restraint Lug Indications," dated January 11, 2006