50-454/456

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 27, 1997

Ms. Irene Johnson, Acting Manager
Nuclear Regulatory Services
Commonwealth Edison Company
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE PROPOSED EXTENSION OF THE BYRON 1 AND BRAIDWOOD 1 3.0 VOLT LICENSE AMENDMENTS FOR ODSCC

Dear Ms. Johnson:

On November 9, 1995, the staff issued license amendments for Byron, Units 1 and 2 and for Braidwood, Units 1 and 2 related to raising the Technical Specification (TS) value of the lower voltage repair limit for steam generator (SG) tubes subject to outer diameter stress corrosion cracking (ODSCC), from 1.0 volt to 3.0 volts on the hot leg side. The lower voltage repair limit remained at 1.0 volt on the cold leg side. The thrust of these amendments was to allow all ODSCC indications on the hot leg side less than 3.0 volts, detected by an eddy current inspection (ECI) in Byron 1 and Braidwood 1, to remain in service subject to certain restrictions in the TSs and as discussed in the safety evaluation issued with the subject license amendments.

One of these restrictions was that the TSs related to the revised voltage repair criteria for ODSCC for Braidwood 1 would be applicable only to the end of the operating cycle scheduled to be completed in spring 1997. A similar restriction applied to Byron 1 for the fuel cycle presently scheduled to end near December 1997. With respect to this latter license amendment, the Commonwealth Edison Company (ComEd) has subsequently stated that it intends to replace the Byron 1 SGs by the end of 1997.

In its letter dated August 19, 1996, ComEd submitted a request to extend for one more operating cycle, the applicability of the license amendments cited above for both Braidwood 1 and Byron 1. The request for the latter unit was submitted so that in the event that the delivery of the replacement SGs for Byron 1 was inadvertently delayed, Byron 1 could be restarted using the SGs now in service after its next scheduled refueling outage (i.e., December 1997) using the present TS value of the lower voltage repair limit for the hot leg side (i.e., 3.0 volts) for ODSCC indications.

During the course of our review of the proposed license amendments, we have identified a need for further information. This request for additional

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information (RAI) is contained in the enclosure to this letter. If you have any questions on these matters, please contact Mr. M. David Lynch at (301) 415-3023.

Sincerely,

/s/

M. David Lynch, Senior Project Manager
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Office of Nuclear Reactor Regulation

Docket Nos. STN 50-454, STN 50-456

Enclosure: Request for Additional Information

cc w/encl: see next page

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REQUEST FOR ADDITIONAL INFORMATION

RELATED TO THE EXTENSION OF THE 3.0 VOLT LOWER VOLTAGE REPAIR LIMIT FOR ODSCC

BYRON UNIT 1 AND BRAIDWOOD UNIT 1

DOCKET NOS. STN 50-454 AND STN 50-456

1. Provide a summary of the results from the inspection of the steam generator (SG) internal structures conducted in the Byron 1 outage in October 1995, similar to the summaries provided in the two reports cited in the references below.

2. The licensee stated in Reference 1 that it visually inspected 89 vertical support bars and 157 vertical support bar welds in the four SGs and found no indication of structural degradation in the welds which would prevent the support bars from performing their function. State whether any types of indications were found. If so, describe the nature of these indications, including the number of such indications and their location and an evaluation of their potential effect on the structural capability of the vertical support bar welds.

3. In Reference 1, the licensee stated that it inspected 50 tubes around each of the three antirotation devices and did not find any operationally-induced degradation of the tube support plates (TSPs). State whether any type of degradation was found. If so, describe the nature of the degradation, including the extent, the location, the probable cause and an evaluation of the effect on the structural capability of the TSPs.

4. In its letter dated August 19, 1996, the licensee stated that it will use a modified eddy current inspection (ECI) technique to inspect 50 tubes adjacent to each antirotation device in all four SGs and to inspect 20 tubes along the patch plate seam in one SG. State when and where this inspection will be performed (e.g., during the upcoming refueling outages at Braidwood 1 and Byron 1).

5. State whether the presence of the TSP intersections will continue to be verified during SG ECIs.

6. In its letter dated August 19, 1996, the licensee stated that it will verify the integrity of the SG tube expansions at the TSP intersections for the 21 SG tubes used to stabilize the TSPs by inspecting 20 percent of these expansions. Additionally, this sample of SG tubes will also be inspected at the top of the tubesheet in the roll transition zone. State when and where this SG tube inspection will be performed (e.g., during the upcoming refueling outages at Braidwood 1 and Byron 1).

Enclosure

Describe the criteria for selecting the initial inspection sample of SG tubes.

7. In its submittal dated August 19, 1996, the licensee also stated that the staff will not be notified if axial indications are detected at the sleeved and expanded joint intersection of the 21 SG tubes with the TSPs or at the TTS. Since these SG tubes were inspected before plugging and no indications were found, the staff requests that it be promptly notified if any type of indication is found in subsequent inspections of these locations.

8. The licensee stated in its August 19, 1996 submittal, that it will continue to implement the criteria for eddy current probe wear recommended by the Nuclear Energy Institute (NEI). This approach requires that all indications greater than 75 percent of the lower voltage repair limit which were inspected with a worn probe, be reinspected with a new probe. State whether Braidwood 1 and Byron 1 will continue to reinspect with a new probe after determining that significant probe wear exists, indications greater than 75 percent of 1.0 volt, even at hot-leg intersections at which the 3.0 volt alternate repair criteria (ARC) is applied.

9. In its submittal dated August 19, 1996, the licensee stated that the probability of axial tensile failure will be calculated in accordance with the guidance in Generic Letter (GL) 95-05 and will combine this probability with the conditional probability of axial burst failure if any indications with a voltage greater than or equal to 15 volts are identified or if a large number of indications between ten and fifteen volts are identified. State the basis for specifying a limit of 15 volts. Indicate why there is an upper limit on this range. Define what constitutes a large number of indications, including the basis for this criterion.

10. The licensee proposed to add definitions of both the Locked TSP Model and the Freespan Model into the Byron 1 and Braidwood 1 TSs. However, the staff review of the definitions proposed to be added to TS Section 4.4.5.4.a indicates that intersections containing a corrosion-induced dent greater than 0.065 inches are not excluded. Provide a basis for this approach.

11. Provide the scheduled date for the start of the Braidwood 1 Cycle 6 refueling outage and the Byron 1 Cycle 8 refueling outage.

12. During a SG blowdown following a postulated main steamline break (MSLB), the pressure drop across a TSP will be determined by the position dependent flow distribution across a TSP. Because of the difference in resistances between fluid flows parallel and perpendicular to the SG tube bundles above the topmost TSP, a multidimensional flow pattern exists. This effect will be most pronounced at the upper TSP.

Accordingly, assess the effect of the multidimensional flow pattern on the position dependent pressure drop across the TSPs.

References

1. ComEd letter dated March 5, 1996, "[illegible]wood Station Unit 1 Steam Generator Interim Plugging Criteria 90 Day Report".

2. ComEd letter dated September 9, 1996, "Byron Station Unit 1 Steam Generator Interim Plugging Criteria 90 Day Report for the End-of-Cycle 7 Inspection".