July 27, 2004

Mr. Christopher M. Crane, President
and Chief Nuclear Officer
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: EVALUATION OF STEAM GENERATOR INSERVICE INSPECTION SUMMARY REPORT, BRAIDWOOD, UNIT 1 (TAC NO. MC1894)

Dear Mr. Crane:

By letters dated May 7, 2003 (ML031360617), July 29, 2003 (ML032190155), July 31, 2003 (ML032170925), and April 16, 2004 (ML041140380) Exelon Generation Company, LLC (Exelon) submitted reports summarizing the steam generator tube inspections performed during the tenth refueling outage (April 2003) at Braidwood Station, Unit 1. Additional information pertaining to the 2003 steam generator tube inspections was summarized by the NRC staff in a telephone conference call summary dated June 18, 2003 (ML031570110).

As discussed in the enclosed evaluation, the staff concludes that Exelon provided the information required by their technical specifications. In addition, the NRC staff did not identify any technical issues that warranted follow up action at this time. The staff did note, however, that 132 tubes were classified as having tube-to-tube contact. Exelon indicated that it would continue to monitor the condition and perform inspections of the affected tubes during each scheduled steam generator inspection. The staff believes that continued monitoring is important especially if a new mechanism (i.e., not related to fabrication) is causing tube-to-tube contact since a new mechanism may result in different wear/corrosion rates than assumed in the original tube integrity analysis.

Please contact me if you have questions.

Sincerely,

/RA/

George F. Dick, Jr., Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE EVALUATION OF TENTH REFUELING OUTAGE

STEAM GENERATOR TUBE INSPECTION RESULTS

EXELON GENERATION COMPANY, LLC

BRAIDWOOD STATION, UNIT 1

DOCKET NO. STN 50-456

By letters dated May 7, 2003 (ML031360617), July 29, 2003 (ML032190155), July 31, 2003 (ML032170925), and April 16, 2004 (ML041140380), Exelon Generation Company, LLC (the licensee) submitted reports summarizing the steam generator tube inspections performed during the tenth refueling outage (April 2003) at Braidwood Station, Unit 1. Additional information pertaining to the 2003 steam generator tube inspections was summarized by the Nuclear Regulatory Commission staff in a telephone conference call summary dated June 18, 2003 (ML031570110).

The four steam generators at Braidwood, Unit 1 were replaced in 1998 with steam generators fabricated by Babcock and Wilcox International. Each steam generator contains 6633 thermally treated Alloy 690 tubes. Each tube has a nominal outside diameter of 0.6875-inch and a nominal wall thickness of 0.040-inch. The tubes were hydraulically expanded at both ends for the full length of the tubesheet and are supported by a number of stainless steel tube supports (lattice grid). The tubes installed in rows 1 through 21 were thermally stress relieved after bending.

The scope and results of the licensee's inspections are contained in the documents referenced above. Based on a review of the above documents, the staff concludes that the licensee provided the information required by their technical specifications. In addition, the staff did not identify any technical issues that warranted follow-up action at this time; however, the staff did have the following observation regarding the results of the licensee's inspection and assessments.

> During fabrication of the steam generators, tube-to-tube contact was identified. This condition was expected to naturally correct itself after one or two cycles of operation in the vertical position (licensee's license amendment application of February 9, 2001, ML010470080). During the preservice inspection, 508 tubes were identified as being in contact. The number of tubes in contact dropped to 85 when examined during the 2000 outage. Reinspection of these 85 tubes during the 2003 outage showed 67 remained in contact; however, 65 additional tubes, which had not been in contact in the past, were classified as being in contact during the 2003 outage. The licensee previously assessed tube integrity given the tube-to-tube contact condition and concluded that there were no structural integrity concerns for the life of the steam generators. In addition, the

licensee indicating they would continue to monitor the condition and perform inspections of the affected tubes during each scheduled steam generator inspection. The staff notes that continued monitoring is important especially if a new mechanism (i.e., not related to fabrication) is causing tube-to-tube contact since a new mechanism may result in different wear/corrosion rates than assumed in the original tube integrity analysis.

Principal Contributor: K. Karwoski

Date: July 27, 2004