July 20, 2006

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

SUBJECT: BRAIDWOOD STATION, UNIT 2 - EVALUATION OF STEAM GENERATOR INSERVICE INSPECTION SUMMARY REPORT (TAC NO. MC8050)

Dear Mr. Crane:

By letters to the Nuclear Regulatory Commission (NRC), dated May 10, 2005, July 27, 2005, and February 13, 2006, you submitted information related to the steam generator tube inspection summary reports for the spring 2005 refueling outage at Braidwood Station (Braidwood), Unit 2, in accordance with the plant's technical specifications (TS).

The NRC staff has completed its review of these reports and concludes that you have provided the information required by the Braidwood TSs, and that no additional follow-up is required at this time.

Sincerely,

/RA/

Robert F. Kuntz, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. STN 50-457

Enclosure:
Evaluation of Steam Generator Inspection Reports

cc w/encl: See next page

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OFFICE OF NUCLEAR REACTOR REGULATION

EVALUATION OF STEAM GENERATOR INSPECTION REPORTS

FROM SPRING 2005 REFUELING OUTAGE

BRAIDWOOD STATION, UNIT 2

DOCKET NO. STN 50-457

1.0 INTRODUCTION

By letters to the Nuclear Regulatory Commission (NRC), dated May 10, 2005, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML051370406), July 27, 2005 (ADAMS Accession No. ML052140465), and February 13, 2006 (ADAMS Accession No. ML060670367), Exelon Generation Company, LLC (the licensee) submitted information related to the steam generator (SG) tube inspections for the spring 2005 outage at Braidwood Station (Braidwood), Unit 2.

2.0 BACKGROUND

Braidwood, Unit 2 has four Westinghouse model D5 SGs. Each SG contains 4,570 thermally-treated Alloy 600 tubes. Each tube has a nominal outside diameter of 0.750-inch and a nominal wall thickness of 0.043-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 with quatrefoil shaped holes. The U-bend region of the tubes installed in Rows 1 through 9 were thermally stress relieved after bending.

3.0 RESULTS OF SPRING 2005 INSPECTION

The licensee provided the scope, extent, methods and results of their SG tube inspections in the documents referenced above. In addition, the licensee described corrective actions (i.e., tube plugging) taken in response to the inspection findings. Of particular note from the refueling outage is that a visual inspection of the secondary side moisture separator region of SG D revealed erosion of the tangential nozzles, downcomer barrels and swirl vanes. The licensee performed an analysis of the thermal performance of the SG, structural integrity of the affected components, and the potential for generation of loose parts and it was determined that the as-found condition of the SG is acceptable and is projected to be acceptable over the next cycle of operation. Given that this region had not been previously inspected, the licensee has not been able to determine when the erosion started or whether the erosion has any connection to the power uprate performed in 2001. Since secondary side water chemistry in SG D has been similar to that of SGs A, B and C, the licensee expects the SGs to be in similar condition and acceptable for at least another cycle of operation. The NRC staff notes that with

ENCLOSURE

respect to degradation of SG tubes, one SG can be worse than the others. As a result, it is not clear whether assuming all of the SGs are similar is appropriate. However, the licensee plans to reinspect SG D during the upcoming Braidwood, Unit 2 refueling outage in the fall of 2006 (A2R12). This inspection will provide additional data to develop a degradation rate. If unexpected degradation or unacceptable degradation rates are identified in SG D, scope expansion into the remaining SGs will be evaluated. Inspection of the secondary moisture separator region of SGs A, B and C is currently planned for the Braidwood, Unit 2 refueling outage in the spring of 2008 (A2R13).

In response to a request for additional information, the licensee stated that it had not performed rotating probe inspections to confirm that no cracking was occurring in wear scars. Given the recent identification of cracking in plants with thermally-treated Alloy 600 tubes, it is plausible that cracks could initiate at or near wear scars in plants with thermally-treated Alloy 600 tubes. The licensee stated that there is no industry experience that units containing thermally-treated Alloy 600 tubing have experienced this type of degradation. Although this is true, the potential for cracks to develop at or near wear scars may increase in the future (given the time dependent nature of cracking phenomenon). Periodic monitoring of wear scars with a rotating probe (or similar technique) to detect the onset of such cracking at these locations (should it ever occur) may permit the indication of such flaws before they leak (and give added confidence that such degradation has not initiated).

4.0 CONCLUSIONS AND FUTURE INSPECTION PLANS

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by the Braidwood technical specifications. In addition, the NRC staff concludes that there are no technical issues that warrant follow-up action at this time since the inspections appear to be consistent with the objective of detecting potential tube degradation and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units.

Principle Contributor: Y. Diaz

Date: July 20, 2006