



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

December 23, 2013

Mr. Scott Batson  
Site Vice President  
Oconee Nuclear Station  
Duke Energy Carolinas, LLC  
7800 Rochester Highway  
Seneca, SC 29672-0752

SUBJECT: OCONEE NUCLEAR STATION, UNIT 1, REVIEW OF THE OCTOBER 2012  
STEAM GENERATOR TUBE INSERVICE INSPECTIONS DURING  
END-OF-CYCLE 27 REFUELING OUTAGE (TAC NO. MF0939)

Dear Mr. Batson:

By letter dated February 27, 2013 (Agencywide Documents Access and Management System Accession No. ML13066A100), Duke Energy Carolinas, LLC., the licensee, submitted information to the U.S. Nuclear Regulatory Commission (NRC) summarizing the results of the October 2012 steam generator tube inspections performed during the End-of-Cycle 27 refueling outage at Oconee Nuclear Station, Unit 1 (ONS 1).

The NRC staff has completed its review of the report and concludes that the licensee provided the information required by the ONS 1 Technical Specifications. No additional follow up is required at this time. The NRC staff's review is enclosed.

If you have any questions, please call me at 301-415-1030.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Guzman", is written over a horizontal line.

Richard V. Guzman, Senior Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-269

Enclosure: As stated

cc w/encl: Distribution via Listserv

OCONEE NUCLEAR STATION, UNIT 1  
SUMMARY OF THE NRC STAFF'S REVIEW OF  
THE 2012 STEAM GENERATOR TUBE INSERVICE INSPECTIONS  
FOR THE END-OF-CYCLE 27 REFUELING OUTAGE  
DOCKET NO. 50-269

By letter dated February 27, 2013 (Agencywide Documents Access and Management System Accession Number ML13066A100), Duke Energy Carolinas, LLC (the licensee), submitted information to the U.S. Nuclear Regulatory Commission (NRC) summarizing the results of the 2012 steam generator (SG) tube inspections performed during the End-of-Cycle 27 refueling outage at Oconee Nuclear Station, Unit 1 (ONS 1). The licensee clarified a few minor points of information with respect to their inspections, subsequent to the submission of the report. The details of these clarifications are summarized below.

ONS 1 has two replacement once-through steam generators (OTSG) designed and fabricated by Babcock and Wilcox International. These OTSGs were put into service in 2004. Each OTSG has 15,631 thermally treated Alloy 690 tubes that have a nominal outside diameter of 0.625 inches and a nominal wall thickness of 0.038 inch. The tubes were hydraulically expanded into the tubesheet for 13 inches from the tube end. The tubesheets are 22 inches thick.

The licensee provided the scope, extent, methods, and results of the OTSG tube inspections in the letters referenced above. In addition, the licensee described corrective actions (i.e., tube plugging) taken in response to the inspection findings.

On July 22 and August 15, 2013, the licensee clarified the following regarding their report:

- The secondary side of each OTSG was found to be in good condition. No structural anomalies were noted. Upper tube bundle deposit conditions were essentially unchanged from that observed after the first cycle of operation on these OTSGs. Some minor tube and support plate deposit accumulation was observed in the upper steam region of OTSG 1A; however, no bridging or clogged broach openings were evident. Several small flake piles were observed on top of the lower tubesheet in each OTSG, indicating that some flake spalling is starting to occur in areas with the thickest tube deposits in the lower tube bundle region. This is reminiscent of observations in the original Oconee OTSGs, but to a much less extent.
- With regard to visual inspection findings at the 6<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup> tube support plates in OTSG 1A, the licensee saw no degradation or corrosion in OTSG 1A.

Widespread wear degradation of tubing at tube support plate (TSP) locations has been observed at all three Oconee units. As discussed in a public meeting on March 27, 2008, the licensee and Babcock & Wilcox (B&W) have determined that the most probable cause of the tube wear indications at TSP locations is the tubes vibrating and impacting the tube support plates. The licensee and B&W have developed a conceptual repair, but the plugging projection model indicates that the Oconee OTSGs can meet their design life without implementing this repair, although a number of tubes may have to be plugged.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by their 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.

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/ RA /

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**ADAMS Accession No. ML13354A012**

\*See memo dated 9/13/13

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