



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

August 27, 2014

Mr. K. Henderson
Site Vice President
Catawba Nuclear Station
Duke Energy Carolinas, LLC
4800 Concord Road
York, NC 29745

SUBJECT: CATAWBA NUCLEAR STATION, UNIT 2 – REVIEW OF THE STEAM
GENERATOR TUBE INSERVICE INSPECTION REPORT FOR THE FALL 2013
REFUELING OUTAGE (TAC NO. MF3355)

Dear Mr. Henderson:

By letter dated January 13, 2014 (Agencywide Documents Access and Management System, (ADAMS) Accession No. ML14016A147), Duke Energy Carolinas, LLC (the licensee) submitted information summarizing the results of the 2013 Steam Generator (SG) tube inspections at the Catawba Nuclear Station, Unit No. 2. These inspections were performed during the end of cycle 19 refueling campaign. The Nuclear Regulatory Commission (NRC) staff conducted a conference call with the licensee on May 27, 2014.

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

If you have any questions, please contact the Project Manager, G. Edward Miller at 301-415-2481 or via e-mail at ed.miller@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Pascarelli", is positioned above the typed name.

Robert J. Pascarelli, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-414

Enclosure:
As stated

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STAFF EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO RESULTS OF THE 2013 STEAM GENERATOR TUBE INSPECTIONS

DUKE ENERGY CAROLINAS, LLC

CATAWBA NUCLEAR STATION, UNIT 2

DOCKET NO. 50-414

By letter dated January 13, 2014 (Agencywide Documents Access Management System Accession No. ML14016A147), Duke Energy Carolinas, LLC (the licensee), submitted information summarizing the results of their fall 2013 steam generator (SG) tube inspections, performed during refueling outage 19 at Catawba Nuclear Station (Catawba), Unit 2. Additional information provided by the licensee during a conference call on May 27, 2014, is summarized below.

Catawba, Unit 2 has four Westinghouse Model D5 SGs, which are designated 2A through 2D. Each SG has 4,570 thermally treated Alloy 600 tubes with an outside diameter of 0.750 inches and a nominal wall thickness of 0.043 inches. The tubes are hydraulically expanded for the full-depth of the tubesheet at each end. The tubes are supported by Type 405 stainless steel support plates with quatrefoil-shaped holes. The U-bend region of the tubes in Rows 1 through 9 was thermally treated after bending, in order to reduce stress.

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

On May 27, 2014, the licensee clarified the following during a conference call:

- At the end of operational cycle 17 (i.e., in refueling outage (RFO) 17), the replacement SGs had 20.13 cumulative effective full power years (EFPY) of operation. In RFO18, the replacement SGs had 21.50 EFPY of operation, and in RFO19, the replacement SGs had 22.89 EFPY of operation.
- The seven tubes plugged in RFO19 were located in SGs 2B and 2C. In SG 2B, the plugged tubes were located in row 28 column 24 (R28C24), R27C23, and R28C23. In SG 2C, the plugged tubes were located in R45C79, R47C78, R46C78, and R45C78.

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- No degradation was observed in any of the SG tube plug examinations or in the SG bowl cladding inspections.
- Other than the foreign object inspections of the secondary face of each SG tubesheet, secondary side inspections included the top of the uppermost tube support plate in SG 2A. Minor amounts of both scale and sludge were observed on this tube support plate. The quatrefoil holes were generally free of blockage from sludge and scale.
- The trend of tube end indications found during the last few inspections has remained flat.
- No primary to secondary leakage was noted during operating cycle 19 and the calculated leakage rate from the portion of the tubes more than 14.01 inches from the top of the tubesheet was zero.
- The following numbers of indications were confirmed/provided by the licensee:

Tubes with anti-vibration bar indications

SG A – 75 tubes/134 indications

SG B – 22 tubes/33 indications

SG C – 48 tubes/69 indications

SG D – 69 tubes/102 indications

Tubes with tube support plate indications

SG A – 8 tubes/10 indications

SG B – 14 tubes/15 indications

SG C – 5 tubes/5 indications

SG D – 3 tubes/3 indications

Tubes with indications within the tubesheet

SG A – 1 tubes/1 indications

SG B – 154 tubes/154 indications

SG C – 11 tubes/11 indications

SG D – 5 tubes/5 indications

Based on a review of the information provided in the SG Tube Inspection Report, 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.

August 27, 2014

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Sincerely,

/RA/

Robert J. Pascarelli, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
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