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

July 10, 2015

Mr. David A. Heacock
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: NORTH ANNA POWER STATION UNIT 2 – REVIEW OF THE STEAM GENERATOR TUBE INSERVICE INSPECTIONS DURING THE 2014 REFUELING OUTAGE (TAC NO. MF5787)

Dear Mr. Heacock:

The U.S. Nuclear Regulatory Commission (NRC) staff formally reviews all steam generator (SG) inservice inspection summary reports submitted by licensees in accordance with the plant's Technical Specification requirements. By letter dated February 11, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15050A040), Virginia Electric & Power Co. (the licensee) submitted information summarizing the results of the fall 2014 steam generator tube inspections at North Anna Power Station, Unit 2. The licensee clarified a few minor points during a follow-up phone call, the details of which are summarized in the enclosed report.

The NRC staff has completed its review of the report and concludes that the licensee provided the information required by North Anna, Unit 2, Technical Specifications and that no additional follow-up is required at this time. The NRC staff's review of this report is enclosed.

Please contact me at (301) 415-2597, if you have any questions regarding this issue.

Sincerely,

Dr. V. Sreenivas, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-339

Enclosure: As stated

cc w/encl: Distribution via Listserv

UNITED STATES NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

REVIEW OF THE STEAM GENERATOR TUBE INSERVICE INSPECTION REPORT

NORTH ANNA POWER STATION, UNIT 2

DOCKET NO. 50-339

By letter dated February 11, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15050A040), Virginia Electric & Power Co. (the licensee) submitted information summarizing the results of the fall 2014 steam generator tube inspections at North Anna Power Station, Unit 2.

North Anna, Unit 2, has three Westinghouse Model 54F replacement Steam Generators (SG) that were installed in 1995. Each SG contains 3,592 thermally treated Alloy 690 tubes, with an outside diameter of 0.875 inches and a wall thickness of 0.050 inches. The tubes are supported by seven Type 405 stainless steel tube support plates. The tube support plate holes are quatrefoil-shaped. The U-bend region of the first eight rows of tubing was stress relieved after bending.

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 (e.g., tube plugging) taken in response to the inspection findings.

On June 2, 2015, the U.S. Nuclear Regulatory Commission (NRC) staff held a conference call with the licensee to clarify the results of the SG tube inspections at North Anna, Unit 2. The details of the call are summarized below:

- Inspection of the tubes was only performed in SG B.

- The licensee performed video examinations of both channel heads during refueling outage 23. There were no gross defects, no breach of weld metal, no missing filler material in the weld, and no discolorations identified.

- All thirty-five internal feedring J-nozzles were inspected in 2010. Four of the 35 J-nozzles (Number 1, 17, 23, and 35) were inspected in 2014 and there was no evidence of degradation or flow-assisted corrosion. The feedring in SG B is made from stainless steel. There was some discoloration of the riser barrels, but ultrasonic testing noted no wall loss.

- Ultrasonic testing thickness measurements were taken in selected regions of the SG B feedring during the outage and identified localized exterior erosion on the side of the feedring thermal sleeve below the discharge of nozzle #35, with a minimum measured wall thickness of 0.291 inches. The localized erosion was evaluated and determined to be acceptable for continued operation until the next scheduled refueling outage in the spring of 2016.

- There were 63, 50, and 80 pounds of sludge removed from SG A, SG B, and SG C, respectively. These quantities are higher than what was removed in prior outages. These increases were attributed to improved sludge lancing equipment and a better process rather than increased corrosion product transport.

- Visual examinations at the top of the tubesheet showed no foreign objects in any of the three SGs and no eddy current indications of foreign objects were found in SG B (only SG B was inspected with eddy current in 2014).

- There are no plugs installed in SG B.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by the Technical Specifications. In addition, the NRC taff concludes that there are no technical issues that warrant follow-up actions 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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