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U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 10-519
NL&OS/JHL
Docket No. 50-339
License No. NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNIT 2
STEAM GENERATOR TUBE INSPECTION REPORT

Pursuant to Technical Specification 5.6.7 for North Anna Power Station Unit 2, Dominion is required to submit a 180-day steam generator tube inspection report. The attachment to this letter provides the steam generator tube inspection report for the North Anna Unit 2 spring 2010 refueling outage.

Should you have any questions or require additional information, please contact Mr. Thomas Shaub at (804) 273-2763.

Very truly yours,

A handwritten signature in black ink, appearing to read "CLF", enclosed within a large, loopy circular flourish.

C. L. Funderburk, Director
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Dominion Resources Services, Inc.
for Virginia Electric and Power Company

Attachment

Commitments made in this letter: None

cc: U.S. Nuclear Regulatory Commission
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Serial No. 10-519
Docket No. 50-339
180-Day SG Report

ATTACHMENT

**NORTH ANNA UNIT 2
180-DAY NRC REPORT REGARDING STEAM GENERATOR TUBE INSPECTION
PER TECHNICAL SPECIFICATION 5.6.7**

**VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION)**

SPRING 2010 - NORTH ANNA UNIT 2 STEAM GENERATOR INSPECTIONS

During the North Anna spring 2010 refueling outage, steam generator inspections were completed in accordance with TS 5.5.8.d for steam generator "B". This was the second inspection conducted using Technical Specifications which incorporated TSTF-449. Transmittal of the following satisfies the North Anna Power Station Technical Specification (TS) reporting requirement section 5.6.7.

Based on initial entry into Mode 4 on April 23, 2010, this report is required to be submitted by October 20, 2010. The Effective Full Power Months (EFPM) for the Unit 2 SG's is 157.5.

Italicized wording represents TS verbiage. The required information is provided under each reporting requirement as follows:

A report shall be submitted within 180 days after the initial entry into Mode 4 following completion of an inspection performed in accordance with the Specification 5.5.8, "Steam Generator (SG) Program." The report shall include:

a. The scope of inspections performed on each SG

The following primary side inspections were performed in steam generator "B":

- Video examination of both channel heads (as-found / as-left) (there were no previously installed tube plugs in SG "B" and none were installed during the spring 2010 outage)
- 100% full-length inspection utilizing bobbin coil probe for all tubes except for Row 1 U-bends
- 26% (928 tubes) hot leg top of tubesheet (+/- 3") utilizing rotating coil probe with tube selection biased toward a secondary side critical area in the sludge zone, peripheral area tubes, and the remainder across the tubesheet
- 16% (570 tubes) cold leg top of tubesheet (+/- 3") utilizing rotating coil probe with tube sample constituting 50% of all tubes within five tubes of the bundle periphery
- 100% Row 1 (98 tubes) U-bend region utilizing rotating coil probe
- Special interest inspections of dents/dings > 2 volts using a rotating coil probe. (Sample size: SG "B" 100% of hot leg indications, 45% all locations)
- Inspection of bobbin identified I-codes (i.e., possible damage indications) with rotating coil probe (Sample size: SG "B" – 0 tests)
- Special interest rotating coil probe exams of largest voltage tubesheet overexpansions (OXP) (Sample size: SG "B" 29 hot leg exams and 21 cold leg exams)
- Bounding rotating coil probe examinations of a foreign object (6 examinations performed)

- Rotating coil probe examinations of all hot leg Historical Manufacturing Brandish Mark indications

The following secondary side inspections were performed in steam generator "B":

- Steam drum upper components visual inspection covering the primary and secondary moisture separators, drain piping, and related components
- Video inspection of the upper tube bundle U-bend area
- Video inspection of the uppermost tube support plate (TSP), (i.e. 7th TSP) in the periphery area and in-bundle at selected tube columns. The 4th, 5th, and 6th TSPs were video inspected in the center bundle area accessed from the 7th TSP inspection port.
- Video inspection of the inside interface of the feedring to J-nozzle joints.

High pressure water lancing was performed in all steam generators with post-lancing top-of-tubesheet video inspections to check for cleanliness and the presence of foreign objects. A pre-lancing, in-bundle visual examination was also performed at the top-of-tubesheet in SG "B". Sludge lancing operations removed 18 pounds of sludge from SG "A", 18 pounds of sludge from SG "B" and 11.5 pounds of sludge from SG "C".

During the post-sludge lancing, top of tubesheet visual examination of SG "A", a 0.06 inch diameter by 1 inch metallic object was identified and removed from the annulus near R10C2 on the cold leg side on the top of the tube sheet. The object appeared to be a small brad. The object was not lodged and was likely moved to as-found location during sludge lancing operations. Close visual examination of the as-found location revealed no evidence of tube degradation. Due to its small size and mass it is considered very unlikely to have caused tube degradation elsewhere.

During the post-sludge lancing, top of tubesheet visual examination of SG "B", a wire sized less than 0.020 inch in diameter by less than 0.5 inch in length, was identified. The object was embedded in hard sludge collar material between tubes R4C50 and R4C51 on the hot leg side on the top of the tube sheet. The exposed portion of the wire broke free and was dropped during retrieval. Further attempts to retrieve the freed fragment were unsuccessful and were discontinued. Due to the small diameter, length, and minimal mass, it was concluded that this object posed no threat to tube integrity.

During the post-sludge lancing, top of tubesheet visual examination of SG "C", a 0.2 inch by 0.5 inch by 0.75 inch metallic object was identified and removed from between R41C29, R42C29, and R42C28 of the hot leg side on the top of the tube sheet. The object appeared to be a small agglomeration of weld slag. The tubes in the vicinity of and adjacent to the object were closely examined visually. Only surface discoloration was observed with no evidence of tube degradation, providing reasonable assurance of structural integrity.

b. Active degradation mechanisms found

No indications of tube degradation were identified during the spring 2010 SG examinations of "B" SG. In addition, the secondary side visual inspections performed on all three SGs identified no component degradation that could compromise tube integrity.

c. Nondestructive examination techniques utilized for each degradation mechanism

Inspections focused on the following degradation mechanisms listed in Table 1 utilizing the referenced eddy current techniques.

Table 1 – Inspection Method for Applicable Degradation Modes

Classification	Degradation Mechanism	Location	Probe Type
Potential	Tube Wear	Anti-Vibration Bars	Bobbin – Detection Bobbin and +Point™ – Sizing
Potential	Tube Wear	Flow Distribution Baffle	Bobbin – Detection Bobbin and +Point™ – Sizing
Existing	Tube Wear	Tube Support Plate	Bobbin – Detection Bobbin and +Point™ – Sizing
Potential	Tube Wear	Straight Leg & AVB Tangents (Row 8, 14, 26)	Bobbin – Detection Bobbin or +Point™ – Sizing
Potential	Tube Wear (foreign objects)	Freespan and TTS	Bobbin and +Point™ – Detection +Point™ - Sizing
Potential	ODSCC	Hot Leg Top-of-Tubesheet Sludge Pile Area	Bobbin and +Point™ – Detection +Point™ - Sizing
Potential	OD Pitting	Top-of-Tubesheet Sludge Pile Area	Bobbin – Detection +Point™ - Sizing
Relevant/ Informational Inspection	PWSCC	Hot Leg Top-of-Tubesheet Sludge Pile Area and Within Tubesheet Anomaly locations	+Point™ – Detection and Sizing
Relevant/Informational Inspection	ODSCC PWSCC	Row 1 U-bends	+Point™ – Detection and Sizing
Relevant/Informational Inspection	ODSCC	Freespan and Tube Supports; TTS outside the critical area	+Point™ – Detection and Sizing

d. Location, orientation (if linear), and measured sizes (if available) of service induced indications

No tube wall degradation was detected during the eddy current examinations of SG "B".

e. Number of tubes plugged during the inspection outage for each active degradation mechanism

No tubes were plugged during this inspection.

f. Total number and percentage of tubes plugged to date

A total of six (6) tubes have been plugged in the North Anna Unit 2 steam generators, i.e. "A" – 1 (0.03%), "B" – 0 (0%), "C" – 5 (0.14%) with an overall percentage of 0.056%.

g. The results of condition monitoring, including the results of tube pulls and in-situ testing

The Condition Monitoring Assessment concluded that steam generator "B" did not exceed any performance criteria during the period since the fall 2005 inspection. No findings from the spring 2010 inspection invalidated the previous operational assessment for any of the three steam generators and the condition monitoring requirements were met. Therefore, tube pulls and in-situ pressure testing were not necessary.

h. The effective plugging percentage for all plugging in each SG

There are no sleeves installed in the North Anna Unit 2 steam generators therefore, the effective plugging percentage remains the same as stated in (f) above.