December 4, 1991

Docket Nos. 50-338
and 50-339

DISTRIBUTION
See attached sheet

Mr. W. L. Stewart
Senior Vice President - Nuclear
Virginia Electric and Power Company
5000 Dominion Blvd.
Glen Allen, Virginia 23060

Dear Mr. Stewart:

SUBJECT: NORTH ANNA UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: PRESERVICE INSPECTION REQUIREMENTS FOR STEAM GENERATOR TUBING (TAC NOS. M81866 AND M81867)

The Commission has issued the enclosed Amendment Nos. 151 and 135 to Facility Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2). The amendments revise the Technical Specifications (TS) in response to your letter dated October 3, 1991.

The amendments revise the NA-1&2 TS 4.4.5.4.a.9 which provides preservice inspection (baseline eddy current examination) requirements for steam generator tubing by removing the unnecessary restriction that the preservice inspection be performed after the field hydostatic test.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/s/
Leon B. Engle, Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 151 to NPF-4
2. Amendment No. 135 to NPF-7
3. Safety Evaluation

cc w/enclosures:
See next page

as modified

OFC	:LA:PD22	:PM:PD22	:D:PD22	:OGC	:EMCB	:EMCB
NAME	:DMiller	:LEngle	:HBerkow	:JNull	:GJohnson	:CYCheng
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DATED: December 4, 1991

AMENDMENT NO. 151 TO FACILITY OPERATING LICENSE NO. NPF-4-NORTH ANNA UNIT 1
AMENDMENT NO. 135 TO FACILITY OPERATING LICENSE NO. NPF-7-NORTH ANNA UNIT 2

Docket File
NRC & Local PDRs
PDII-2 Reading
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cc: Plant Service list

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

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 151
License No. NPF-4

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Virginia Electric and Power Company et al., (the licensee) dated October 3, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.D.(2) of Facility Operating License No. NPF-4 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 151 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 4, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 151

TO FACILITY OPERATING LICENSE NO. NPF-4

DOCKET NO. 50-338

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page as indicated. The revised page is identified by amendment number and contains vertical lines indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

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9. Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This inspection shall be performed using the equipment and techniques expected to be used during subsequent inservice inspection.

b. The steam generator shall be determined OPERABLE after completing the corresponding actions (plug all tubes exceeding the plugging limit and all tubes containing through-wall cracks) required by Table 4.4-2.

4.4.5.5 Reports

a. Following each inservice inspection of steam generator tubes, the number of tubes plugged in each steam generator shall be reported to the Commission within 15 days.

b. The complete results of the steam generator tube inservice inspection shall be reported on an annual basis for the period in which this inspection was completed. This report shall include:

1. Number and extent of tubes inspected.

2. Location and percent of wall-thickness penetration for each indication of an imperfection.

3. Identification of tubes plugged.

c. Results of steam generator tube inspections which fall into Category C-3 require prompt notification of the Commission pursuant to Section 50.72 to 10 CFR Part 50. A Licensee Event Report shall be submitted pursuant to Section 50.73 to 10 CFR Part 50 and shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence.

TABLE 4.4–1

MINIMUM NUMBER OF STEAM GENERATORS TO BE INSPECTED DURING INSERVICE INSPECTION

Preservice Inspection	No			Yes		
No. of Steam Generators per Unit	Two	Three	Four	Two	Three	Four
First Inservice Inspection	All			One	Two	Two
Second & Subsequent Inservice Inspections	One[1]			One[1]	One[2]	One[3]

Table Notation:

1. The inservice inspection may be limited to one steam generator on a rotating schedule encompassing 3 N % of the tubes (where N is the number of steam generators in the plant) if the results of the first or previous inspections indicate that all steam generators are performing in a like manner. Note that under some circumstances, the operating conditions in one or more steam generators may be found to be more severe than those in other steam generators. Under such circumstances the sample sequence shall be modified to inspect the most severe conditions.

2. The other steam generator not inspected during the first inservice inspection shall be inspected. The third and subsequent inspections should follow the instructions described in 1 above.

3. Each of the other two steam generators not inspected during the first inservice inspections shall be inspected during the second and third inspections. The fourth and subsequent inspections shall follow the instructions described in 1 above.

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

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 135
License No. NPF-7

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Virginia Electric and Power Company, et al., (the licensee) dated October 3, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-7 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 135 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of issuance shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 4, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 135

TO FACILITY OPERATING LICENSE NO. NPF-7

DOCKET NO. 50-339

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page as indicated. The revised page is identified by amendment number and contains vertical lines indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

Page
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9. Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This inspection shall be performed using the equipment and techniques expected to be used during subsequent inservice inspection.

b. The steam generator shall be determined OPERABLE after completing the corresponding actions (plug all tubes exceeding the plugging limit and all tubes containing through-wall cracks) required by Table 4.4-2.

4.4.5.5 Reports

a. Following each inservice inspection of steam generator tubes, the number of tubes plugged in each steam generator shall be reported to the Commission within 15 days.

b. The complete results of the steam generator tube inservice inspection shall be reported on an annual basis for the period in which this inspection was completed. This report shall include:

1. Number and extent of tubes inspected.

2. Location and percent of wall-thickness penetration for each indication of an imperfection.

3. Identification of tubes plugged.

c. Results of steam generator tube inspections which fall into Category C-3 require prompt notification of the Commission pursuant to Section 50.72 to 10 CFR Part 50. A Licensee Event Report shall be submitted pursuant to Section 50.73 to 10 CFR Part 50 and shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence.

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MINIMUM NUMBER OF STEAM GENERATORS TO BE INSPECTED DURING INSERVICE INSPECTION

Preservice Inspection	No			Yes		
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First Inservice Inspection	All			One	Two	Two
Second & Subsequent Inservice Inspections	One[1]			One[1]	One[2]	One[3]

Table Notation:

1. The inservice inspection may be limited to one steam generator on a rotating schedule encompassing 3 N % of the tubes (where N is the number of steam generators in the plant) if the results of the first or previous inspections indicate that all steam generators are performing in a like manner. Note that under some circumstances, the operating conditions in one or more steam generators may be found to be more severe than those in other steam generators. Under such circumstances the sample sequence shall be modified to inspect the most severe conditions.

2. The other steam generator not inspected during the first inservice inspection shall be inspected. The third and subsequent inspections should follow the instructions described in 1 above.

3. Each of the other two steam generators not inspected during the first inservice inspections shall be inspected during the second and third inspections. The fourth and subsequent inspections shall follow the instructions described in 1 above.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 151 AND 135 TO

FACILITY OPERATING LICENSE NOS. NPF-4 AND NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY

OLD DOMINION ELECTRIC COOPERATIVE

NORTH ANNA POWER STATION, UNITS NO. 1 AND NO. 2

DOCKET NOS. 50-338 AND 50-339

1.0 INTRODUCTION

By letter dated October 3, 1991, the Virginia Electric and Power Company (the licensee) proposed a change to the Technical Specifications (TS) for the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2). The change would revise the NA-1&2 TS 4.4.5.4.a.9 which provides preservice inspection (baseline eddy current examination) requirements for steam generator (SG) tubing by removing the restriction that the preservice inspection be performed after the field hydrostatic pressure test. The proposed change is similar to and consistent with the baseline inspection philosophy already approved by the NRC for other operating nuclear power plants.

This proposed TS change affects surveillance requirement 4.4.5.4.a.9. The phrase, "after the field hydrostatic test and prior to initial POWER OPERATION," found in the current second sentence of that paragraph would be deleted. Subsequent to deletion of this phrase, surveillance requirement 4.4.5.4.a.9 would read as follows: "Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This inspection shall be performed using the equipment and techniques expected to be used during subsequent inservice inspection."

NRC Regulatory Guide 1.83, Revision 1, describes a method acceptable to the NRC staff for implementing General Design Criteria (GDC) 14, 15, 31, and 32 of Appendix A to 10 CFR Part 50 by reducing the probability and consequences of SG tube failures through periodic inservice inspection for early detection of defects and deterioration.

GDC-14, "Reactor Coolant Pressure Boundary," and GDC-31, "Fracture Prevention of Reactor Coolant Pressure Boundary," require that the reactor coolant pressure boundary have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture. GDC-15, "Reactor Coolant System Design," requires that the reactor coolant system be designed with sufficient margin to ensure that the design conditions of the reactor coolant

pressure boundary are not exceeded during any condition of normal operation, including anticipated operational occurrences. Furthermore, GDC-32, "Inspection of Reactor Coolant Pressure Boundary," requires that components which are part of the reactor coolant pressure boundary be designed to permit periodic inspection and testing of critical areas to assess their structural and leak-tight integrity.

The NA-1&2 TS surveillance requirements 4.4.5.1 through 4.4.5.5 describe an augmented inservice inspection program which is required to be performed in conjunction with the inservice inspection requirements of Section XI of the ASME Boiler and Pressure Vessel Code. The combination of these inspection programs serve to demonstrate the operability of the SGs.

2.0 DISCUSSION

The NA-1&2 TS surveillance requirement 4.4.5.4.a.9 requires that an inspection of the full length of each tube in each SG be performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This surveillance requirement further specifies that the preservice inspection be performed after the field hydrostatic test prior to initial power operation using the equipment and techniques expected to be used during subsequent inservice inspection. The purpose of the proposed change is to revise the TS requirement for preservice inspection of SG tubes by removing the unnecessary restriction that the preservice inspection be performed after the field hydrostatic pressure test.

The requested TS change continues to conform with the ASME Section XI requirements. ASME Section XI allows that shop-performed examinations may serve in lieu of the on-site preservice examinations provided that (1) the examinations are conducted under conditions and with equipment and techniques equivalent to those that are expected to be employed for subsequent inservice examinations, and (2) the shop examination records are documented and identified in a form consistent with Code requirements. In addition, the Code allows that these preservice examinations may be performed either prior to or following the system hydrostatic pressure tests.

Regulatory Guide 1.83, Revision 1, provides the NRC's regulatory positions on the content and establishment of an inservice inspection program for SG tubing. Regulatory position C.3.a of Regulatory Guide 1.83, Revision 1, directs that all tubes in the SGs should be inspected by eddy current or alternative techniques prior to service to establish a baseline condition of the tubing. The regulatory position does not specifically require that this baseline inspection be performed following any field hydrostatic pressure test. In fact, the discussion of Regulatory Guide 1.83, Revision 1, acknowledges the use of the usual shop examination of tubing as an adequate baseline examination.

There is substantial benefit to performing the preservice inspection of the tubing of the SGs in the vendor's shop in lieu of post-installation inspection. These benefits include:

1. ALARA. Although an in-place preservice inspection of the SG tubes could be performed near the end of the associated replacement outage, many of the surrounding components will still be radiologically activated and many areas may still be contaminated. Hence, the dose to the inspection personnel would be reduced by performing the inspection in the vendor's shop. Even considering the scope of the preservice inspection and the outage-related efforts used to reduce dose to workers, a 5-10 man-rem savings would be expected by performing this inspection in the shop in lieu of in-place at NA-1.

2. Ease of inspection. The shop inspection effort is easier to conduct than the in-place inspection in that the inspection equipment can be positioned in close proximity to the SG tube bundle assemblies and access by personnel is facilitated.

3. Reduced outage time. The inspection can be performed in the shop at a convenient time after the shop hydrostatic pressure test without impact on the delivery schedule. However, for each SG inspected in the field, it is expected to take approximately 7 days to complete the inspection and an additional 2 days to complete the data analysis. If performed during the replacement outage with the SGs in-place, the majority of this time would be on the critical path of the outage schedule. By eliminating this inspection activity from the schedule, the outage duration could be reduced.

The augmented TS surveillance requirements for inspection of the SG tubes further ensure that the structural integrity of this portion of the reactor coolant system will be maintained. The purpose of TS 4.4.5.4.a.9 is to require the baseline condition of the SG tubes be established prior to placing the SG into service. This surveillance requirement is only applicable for initial plant startup and for any subsequent unit restart following replacement of an SG tube bundle. The requirement that the preservice inspection of the tubing be performed only after the field hydrostatic pressure test is considered impractical for replacement of SGs in a plant that has been previously inservice. The preservice inspection serves to provide reasonable assurance that subsequent inservice inspections will provide evidence of structural degradation of the tubes. The proposed TS change does not affect or change this basis.

The proposed schedular change does not reduce the effectiveness of the eddy current baseline inspection. The shop-performed eddy current examinations will be performed after the required ASME Section III hydrostatic pressure test. Subsequent to installation of the replacement SGs scheduled for 1993 at NA-1, system hydrostatic pressure tests must be performed in accordance with ASME Section XI. These test pressures are substantially less than the Section III hydrotest and will not affect the results of the baseline eddy current examinations.

The proposed TS change does not change the intent of the surveillance requirement. The preservice inspection of the tubes of the replacement SGs will still be performed prior to placing the replacement SGs into service.

3.0 EVALUATION

The proposed change affects only the schedule for performing the preservice inspection of tubing in the replacement SGs by removing the restriction that the preservice inspection be performed only after the field hydrostatic pressure test. The proposed change is in compliance with the requirements of Regulatory Guide 1.83, Revision 1, and Section XI of the ASME Boiler and Pressure Vessel Code. The proposed change continues to ensure that preservice inspection of replacement SG tubes will be performed to establish the baseline condition of SG tubing. Also, the inspection, as required, will still be performed prior to the resumption of service following the SG replacement and thus ensure that subsequent inservice inspections will provide evidence of structural degradation of SG tubes. In addition, the proposed schedular change does not reduce the effectiveness of the eddy current baseline inspection. The shop-performed eddy current examinations will be performed after the required ASME Section III hydrostatic pressure test. This hydrotest will be conducted at a test pressure of 1.25 times the design pressure. Subsequent to installation of the SG replacement component, system hydrostatic pressure tests must be performed in accordance with ASME Section XI. These test pressures are substantially less than the Section III hydrotest and will not affect the results of the baseline eddy current examinations. Finally, the proposed change, as discussed above, has been previously approved by the NRC for other operating facilities. Therefore, based on all of the above, the staff finds the proposed change to be acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Virginia State official was notified of the proposed issuance of the amendments. The State official had no comment.

5.0 ENVIRONMENTAL CONSIDERATION

These amendments change a surveillance requirement. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding (56 FR 55950). Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: L. Engle

Date: December 4, 1991