

March 11, 1988

Docket Nos. 50-338  
and 50-339

Mr. W. L. Stewart  
Vice President - Nuclear Operations  
Virginia Electric and Power Company  
Post Office Box 26666  
Richmond, Virginia 23261

Dear Mr. Stewart:

SUBJECT: NORTH ANNA UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: PRIMARY  
COOLANT SPECIFIC ACTIVITY LIMITS (TAC NOS. 65518 AD 65519)

DISTRIBUTION

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The Commission has issued the enclosed Amendment Nos. 96 and 83 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 June 1, 1987.

The amendments change NA-1&2 TS 3/4.4.8, B3/4.4.8, 6.9.1.5.c, and 6.9.2.f, which are associated with primary coolant specific activity limits, in order to comply with NRC Generic Letter 85-19, "Reporting Requirements on Primary Coolant Iodine Activity."

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.96 to NPF-4
2. Amendment No.83 to NPF-7
3. Safety Evaluation

cc w/enclosures:  
See next page

LA PDR II-2  
DM Miller  
2/24/88

PM PDR II-2  
LEngle:bg  
3/4/88

D: PDR II-2  
HBerkow  
3/11/88

OGC  
Woodward  
3/4/88

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PDR ADOCK 05000338  
P PDR

Mr. W. L. Stewart  
Virginia Electric & Power Company

North Anna Power Station  
Units 1 and 2

cc:

Mr. William C. Porter, Jr.  
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Louisa County  
P.O. Box 160  
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Atomic Safety and Licensing Appeal  
Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

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Department of Health  
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Richmond, Virginia 23219

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Supreme Court Building  
101 North 8th Street  
Richmond, Virginia 23219

Resident Inspector/North Anna  
c/o U.S. NRC  
Senior Resident Inspector  
Route 2, Box 78  
Mineral, Virginia 23117



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. 96  
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 June 1, 1987, 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.

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P PDR

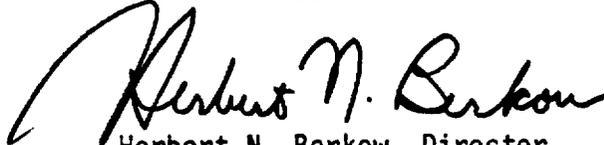
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.D.(?) of Facility Operating License No. NPF-4 is hereby amended to read as follows:

(?) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 96, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective within 14 days of the date of its issuance.

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: March 11, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 96

TO FACILITY OPERATING LICENSE NO. NPF-4

DOCKET NO. 50-338

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

Page

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TABLE 4.4-3

REACTOR COOLANT SYSTEM  
CHEMISTRY LIMITS SURVEILLANCE REQUIREMENTS

<u>PARAMETER</u>	<u>MINIMUM</u> <u>ANALYSIS FREQUENCIES</u>	
DISSOLVED OXYGEN*	At least once per 72 hours	
CHLORIDE**	At least once per 72 hours	
FLUORIDE**	At least once per 72 hours	

\* Not required with  $T_{avg} \leq 250^{\circ}F$

\*\* Not required when the Reactor Coolant System is drained below the reactor pressure vessel nozzle and the internals and/or head are in place. |

REACTOR COOLANT SYSTEM

3/4.4.8 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.8 The specific activity of the primary coolant shall be limited to:

- a.  $\leq 1.0 \mu\text{Ci/gram DOSE EQUIVALENT I-131}$ , and
- b.  $\leq 100/\bar{E} \mu\text{Ci/gram}$ .

APPLICABILITY: MODES 1, 2, 3, 4 and 5.

ACTION: MODES 1, 2 and 3\*

- a. With the specific activity of the primary coolant  $> 1.0 \mu\text{Ci/gram DOSE EQUIVALENT I-131}$  for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in at least HOT STANDBY with  $T_{\text{avg}} < 500^\circ\text{F}$  within 6 hours.
- b. With the specific activity of the primary coolant  $> 100/\bar{E} \mu\text{Ci/gram}$ , be in at least HOT STANDBY with  $T_{\text{avg}} < 500^\circ\text{F}$  within 6 hours.

MODES 1, 2, 3, 4 and 5

- a. With the specific activity of the primary coolant  $> 1.0 \mu\text{Ci/gram DOSE EQUIVALENT I-131}$  or  $> 100/\bar{E} \mu\text{Ci/gram}$ , perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits.

\*With  $T_{\text{avg}}$  greater than or equal to  $500^\circ\text{F}$ .

REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION

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SURVEILLANCE REQUIREMENTS

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4.4.8 The specific activity of the primary coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.

TABLE 4.4-4  
PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE  
AND ANALYSIS PROGRAM

<u>TYPE OF MEASUREMENT AND ANALYSIS</u>	<u>SAMPLE AND ANALYSIS FREQUENCY</u>	<u>MODES IN WHICH SAMPLE ANALYSIS REQUIRED</u>
1. Gross Activity Determination	At least once per 72 hours	1, 2, 3, 4
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	1 per 14 days	1
3. Radiochemical for $\bar{E}$ Determination	1 per 6 months*	1
4. Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 1.0 $\mu\text{Ci}/\text{gram}$ DOSE EQUIVALENT I-131 or $100/\bar{E}$ $\mu\text{Ci}/\text{gram}$ , and	1 <sup>#</sup> , 2 <sup>#</sup> , 3 <sup>#</sup> , 4 <sup>#</sup> , 5 <sup>#</sup>
	b) One sample between 2 & 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.	1, 2, 3

<sup>#</sup>Until the specific activity of the primary coolant system is restored within its limits.

\* Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since the reactor was last subcritical for 48 hours or longer.

## REACTOR COOLANT SYSTEM

### BASES

#### 3/4.4.7 CHEMISTRY

The limitations on Reactor Coolant System chemistry ensure that corrosion of the Reactor Coolant System is minimized and reduces the potential for Reactor Coolant System leakage or failure due to stress corrosion. Maintaining the chemistry within the Steady State Limits provides adequate corrosion protection to ensure the structural integrity of the Reactor Coolant System over the life of the plant. The associated effects of exceeding the oxygen, chloride and fluoride limits are time and temperature dependent. Corrosion studies show that operation may be continued with contaminant concentration levels in excess of the Steady State Limits, up to the Transient Limits, for the specified limited time intervals without having a significant effect on the structural integrity of the Reactor Coolant System. The time interval permitting continued operation within the restrictions of the Transient Limits provides time for taking corrective actions to restore the contaminant concentrations to within the Steady State Limits.

The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

#### 3/4.4.8 SPECIFIC ACTIVITY

The limitations on the specific activity of the primary coolant ensure that the resulting 2 hour doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits following a steam generator tube rupture accident in conjunction with an assumed steady state primary-to-secondary steam generator leakage rate of 1.0 GPM. The values for the limits on specific activity represent interim limits based upon a parametric evaluation by the NRC of typical site locations. These values are conservative in that specific site parameters of the North Anna site such as site boundary location and meteorological conditions, were not considered in this evaluation. The NRC is finalizing site specific criteria which will be used as the basis for the reevaluation of the specific activity limits of this site. This reevaluation may result in higher limits.

## REACTOR COOLANT SYSTEM

### BASES

The ACTION statement permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity  $> 1.0 \mu\text{Ci/gram DOSE EQUIVALENT I-131}$ , but within the allowable limit shown on Figure 3.4-1, accommodates possible iodine spiking phenomenon which may occur following changes in THERMAL POWER.

Reducing  $T_{\text{avg}}$  to  $< 500^\circ\text{F}$  prevents the release of activity should a steam generator tube rupture since the saturation pressure of the primary coolant is below the lift pressure of the atmospheric steam relief valves. The surveillance requirements provide adequate assurance that excessive specific activity levels in the primary coolant will be detected in sufficient time to take corrective action. Information obtained on iodine spiking will be used to assess the parameters associated with spiking phenomena. A reduction in frequency of isotopic analyses following power changes may be permissible if justified by the data obtained.

#### 3/4.4.9 PRESSURE/TEMPERATURE LIMITS

All components in the Reactor Coolant System are designed to withstand the effects of cyclic loads due to system temperature and pressure changes. These cyclic loads are introduced by normal load transients, reactor trips, and startup and shutdown operations. The various categories of load cycles used for design purposes are provided in Section 5.2 of the FSAR. During startup and shutdown, the rates of temperature and pressure changes are limited so that the maximum specified heatup and cooldown rates are consistent with the design assumptions and satisfy the stress limits for cyclic operation.

During heatup, the thermal gradients in the reactor vessel wall produce thermal stresses which vary from compressive at the inner wall to tensile at the outer wall. These thermal induced compressive stresses tend to alleviate the tensile stresses induced by the internal pressure. Therefore, a pressure-temperature curve based on steady state conditions (i.e., no thermal stresses) represents a lower bound of all similar curves for finite heatup rates when the inner wall of the vessel is treated as the governing location.

## ADMINISTRATIVE CONTROLS

### ANNUAL REPORTS<sup>1/</sup>

6.9.1.4 Annual reports covering the activities of the unit as described below for the previous calendar year shall be submitted prior to March 1 of each year. The initial report shall be submitted prior to March 1 of the year following initial criticality.

6.9.1.5 Reports required on an annual basis shall include:

- a. A tabulation on an annual basis of the number of station, utility, and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man-rem exposure according to work and job functions,<sup>2/</sup> e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance (describe maintenance), waste processing, and refueling. The dose assignments to various duty functions may be estimated based on pocket dosimeter, TLD, or film badge measurements. Small exposures totalling less than 20 percent of the individual total dose need not be accounted for. In the aggregate, at least 80 percent of the total whole body dose received from external sources should be assigned to specific major work functions.
- b. The complete results of the steam generator tube inservice inspections performed during the report period (Reference Specification 4.4.5.5.b.).
- c. The results of specific activity analysis in which the primary coolant exceeded the limits of Specification 3.4.8. The following information shall be included: (1) Reactor power history starting 48 hours prior to the first sample in which the limit was exceeded; (2) Results of the last isotopic analysis for radioiodine performed prior to exceeding the limit, results of analysis while limit was exceeded and results of one analysis after the radioiodine activity was reduced to less than limit. Each result should include date and time of sampling and the radioiodine concentrations; (3) Clean-up system flow history starting 48 hours prior to the first sample in which the limit was exceeded; (4) Graph of the I-131 concentration and one other radioiodine isotope concentration in microcuries per gram as a function of time for the duration of the specific activity above the steady-state level; and (5) The time duration when the specific activity of the primary coolant exceeded the radioiodine limit.

<sup>1/</sup> A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station.

<sup>2/</sup> This tabulation supplements the requirements of §20.407 of 10 CFR Part 20.

## ADMINISTRATIVE CONTROLS

### MONTHLY OPERATING REPORT

6.9.1.6 Routine reports of operating statistics and shutdown experience, including documentation of all challenges to the Reactor Coolant System PORVs or safety valves, shall be submitted on a monthly basis to the Director, Office of Management and Program Analysis, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, with a copy to the Regional Office of Inspection and Enforcement, no later than the 15th of each month following the calendar month covered by the report.

## ADMINISTRATIVE CONTROLS (Continued)

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### SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Regional Administrator, Region II, within the time period specified for each report. These reports shall be submitted covering the activities identified below pursuant to the requirement of the applicable reference specification:

- a. Inservice Inspection Program Reviews shall be reported within 90 days of completion. Specification 4.0.5.
- b. ECCS Actuation shall be reported within 90 days of the occurrence. The report shall describe the circumstances of the actuation and the total accumulated cycles to date. Specifications 3.5.2 and 3.5.3.
- c. With Seismic Monitoring Instrumentation inoperable for more than 30 days, submit a special report within the next 10 days outlining the cause of the malfunction and the plans for restoring the instrumentation to operable status. Specification 3.3.3.3.
- d. For all seismic events actuating a seismic monitoring instrument, submit a special report within 10 days describing the magnitude, frequency spectrum and resultant effects upon features important to safety. Specification 4.3.3.3.2.
- e. With Meteorological Instrumentation inoperable for more than 7 days, submit a special report within the next 10 days, outlining the cause of the malfunction and the plans for restoring the instrumentation to operable status. Specification 3.3.3.4.
- f. DELETED.
- g. With sealed source or fission detector leakage tests revealing the presence of  $\geq 0.005$  microcuries of removable contamination submit a special report on an annual basis outlining the corrective actions taken to prevent the spread of contamination. Specification 4.7.11.1.3.
- h. With the MTC more positive than  $0 \Delta k/k/F$  submit a special report within the next 10 days describing the value of the measured MTC, the interim control rod withdrawal limits and the predicted average core burnup necessary for restoring the positive MTC to within its limit for the all rods withdrawn condition. Specification 3.1.1.4.

- i. For any abnormal degradation of the structural integrity of the reactor vessel or the Reactor Coolant System pressure boundary detected during the performance of Specification 4.4.10, an initial report shall be submitted within 10 days after detection and a detailed report submitted within 90 days after the completion of Specification 4.4.10.
- j. For any abnormal degradation of the containment structure detected during the performance of Specification 4.6.1.6, an initial report shall be submitted within 10 days after completion of Specification 4.6.1.6. A final report, which includes (1) a description of the condition of the liner plate and concrete, (2) inspection procedure, (3) the tolerance on cracking, and (4) the corrective actions taken, shall be submitted within 90 days after the completion of Specification 4.6.1.6.
- k. Inoperable Fire Detection Instrumentation, Specification 3.3.3.7.
- l. Inoperable Fire Suppression Systems, Specifications 3.7.14.1, 3.7.14.2, 3.7.14.3, 3.7.14.4 and 3.7.14.5.

#### 6.10 RECORD RETENTION

6.10.1 The following records shall be retained for at least five years:

- a. Records and logs of facility operation covering time interval at each power level.
- b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.
- c. All REPORTABLE EVENTS and Special Reports.
- d. Records of surveillance activities, inspections and calibrations required by these Technical Specifications.
- e. Records of changes made to Operating Procedures.
- f. Records of radioactive shipments.
- g. Records of sealed source leak tests and results.
- h. Records of annual physical inventory of all sealed source material of record.
- i. Records of the annual audit of the Station Emergency Plan and implementing procedures.
- j. Records of the annual audit of the Station Security Plan and implementation procedures.

6.10.2 The following records shall be retained for the duration of the Facility Operating License:



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. 83  
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 June 1, 1987, 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. 83 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective within 14 days of the date of its issuance.

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: March 17, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 93

TO FACILITY OPERATING LICENSE NO. NPF-7

DOCKET NO. 50-339

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

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TABLE 4.4-3

REACTOR COOLANT SYSTEM

CHEMISTRY LIMITS SURVEILLANCE REQUIREMENTS

<u>PARAMETER</u>	<u>MINIMUM ANALYSIS FREQUENCIES</u>
DISSOLVED OXYGEN*	At least once per 72 hours
CHLORIDE**	At least once per 72 hours
FLUORIDE**	At least once per 72 hours

\* Not required with  $T_{avg}$  less than or equal to 250°F

\*\* Not required when the Reactor Coolant System is drained below the reactor pressure vessel nozzle and the internals and/or head are in place.

REACTOR COOLANT SYSTEM

3/4.4.8 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

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3.4.8 The specific activity of the primary coolant shall be limited to:

- a. Less than or equal to 1.0  $\mu\text{Ci}/\text{gram}$  DOSE EQUIVALENT I-131, and
- b. Less than or equal to  $100/\bar{E}$   $\mu\text{Ci}/\text{gram}$ .

APPLICABILITY: MODES 1, 2, 3, 4 and 5.

ACTION: MODES 1, 2 and 3\*

- a. With the specific activity of the primary coolant greater than 1.0  $\mu\text{Ci}/\text{gram}$  DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in at least HOT STANDBY with  $T_{\text{avg}}$  less than 500°F within 6 hours.
- b. With the specific activity of the primary coolant greater than  $100/\bar{E}$   $\mu\text{Ci}/\text{gram}$ , be in at least HOT STANDBY with  $T_{\text{avg}}$  less than 500°F within 6 hours.

\*With  $T_{\text{avg}}$  greater than or equal to 500°F.

REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

MODES 1, 2, 3, 4 and 5

- a. With the specific activity of the primary coolant greater than 1.0  $\mu\text{Ci}/\text{gram}$  DOSE EQUIVALENT I-131 or greater than  $100/\bar{E}$   $\mu\text{Ci}/\text{gram}$ , perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits.

SURVEILLANCE REQUIREMENTS

4.4.8 The specific activity of the primary coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.

TABLE 4.4-4  
PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE  
AND ANALYSIS PROGRAM

<u>TYPE OF MEASUREMENT AND ANALYSIS</u>	<u>SAMPLE AND ANALYSIS FREQUENCY</u>	<u>MODES IN WHICH SAMPLE ANALYSIS REQUIRED</u>
1. Gross Activity Determination	At least once per 72 hours	1, 2, 3, 4
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	1 per 14 days	1
3. Radiochemical for $\bar{E}$ Determination	1 per 6 months*	1
4. Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 1.0 $\mu\text{Ci/gram}$ DOSE EQUIVALENT I-131  or $100/\bar{E}$ $\mu\text{Ci/gram}$ , and	1 <sup>#</sup> , 2 <sup>#</sup> , 3 <sup>#</sup> , 4 <sup>#</sup> , 5 <sup>#</sup>
	b) One sample between 2 and 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.	1, 2, 3

<sup>#</sup> Until the specific activity of the primary coolant system is restored within its limits.

\* Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since the reactor was last subcritical for 48 hours or longer.

## REACTOR COOLANT SYSTEM

### BASES

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#### 3/4.4.7 CHEMISTRY

The limitations on Reactor Coolant System chemistry ensure that corrosion of the Reactor Coolant System is minimized and reduces the potential for Reactor Coolant System leakage or failure due to stress corrosion. Maintaining the chemistry within the Steady State Limits provides adequate corrosion protection to ensure the structural integrity of the Reactor Coolant System over the life of the plant. The associated effects of exceeding the oxygen, chloride and fluoride limits are time and temperature dependent. Corrosion studies show that operation may be continued with contaminant concentration levels in excess of the Steady State Limits, up to the Transient Limits, for the specified limited time intervals without having a significant effect on the structural integrity of the Reactor Coolant System. The time interval permitting continued operation within the restrictions of the Transient Limits provides time for taking corrective actions to restore the contaminant concentrations to within the Steady State Limits.

The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

#### 3/4.4.8 SPECIFIC ACTIVITY

The limitations on the specific activity of the primary coolant ensure that the resulting 2 hour doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits following a steam generator tube rupture accident in conjunction with an assumed steady state primary-to-secondary steam generator leakage rate of 1.0 GPM. The values for the limits on specific activity represent interim limits based upon a parametric evaluation by the NRC of typical site locations. These values are conservative in that specific site parameters of the North Anna site such as site boundary location and meteorological conditions, were not considered in this evaluation. The NRC is finalizing site specific criteria which will be used as the basis for the reevaluation of the specific activity limits of this site. This reevaluation may result in higher limits.

## REACTOR COOLANT SYSTEM

### BASES

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The ACTION statement permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity greater than 1.0  $\mu\text{Ci}/\text{gram}$  DOSE EQUIVALENT I-131, but within the allowable limit shown on Figure 3.4-1, accommodates possible iodine spiking phenomenon which may occur following changes in THERMAL POWER.

Reducing  $T_{\text{avg}}$  to less than 500°F prevents the release of activity should a steam generator tube rupture since the saturation pressure of the primary coolant is below the lift pressure of the atmospheric steam relief valves. The surveillance requirements provide adequate assurance that excessive specific activity levels in the primary coolant will be detected in sufficient time to take corrective action. Information obtained on iodine spiking will be used to assess the parameters associated with spiking phenomena. A reduction in frequency of isotopic analyses following power changes may be permissible if justified by the data obtained.

#### 3/4.4.9 PRESSURE/TEMPERATURE LIMITS

The temperature and pressure changes during heatup and cooldown are limited to be consistent with the requirements given in the ASME Boiler and Pressure Vessel Code, Section III, Appendix G.

- 1) The reactor coolant temperature and pressure and system heatup and cooldown rates (with the exception of the pressurizer) shall be limited in accordance with Figures 3.4-2 and 3.4-3 for the first full-power service period.

## ADMINISTRATIVE CONTROLS

6.9.1.2 The startup report shall address each of the tests identified in the FSAR and shall include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation shall also be described. Any additional specific details requested in license conditions based on other commitments shall be included in this report.

6.9.1.3 Startup reports shall be submitted within (1) 90 days following completion of the startup test program, (2) 90 days following resumption or commencement of commercial power operation, or (3) 9 months following initial criticality, whichever is earliest. If the Startup Report does not cover all three events (i.e., initial criticality, completion of startup test program, and resumption or commencement of commercial power operation), supplementary reports shall be submitted at least every three months until all three events have been completed.

### ANNUAL REPORTS <sup>1/</sup>

6.9.1.4 Annual reports covering the activities of the unit as described below for the previous calendar year shall be submitted prior to March 1 of each year. The initial report shall be submitted prior to March 1 of the year following initial criticality.

6.9.1.5 Reports required on an annual basis shall include:

- a. A tabulation on an annual basis of the number of station, utility, and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man-rem exposure according to work and job functions,<sup>2/</sup> e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance (describe maintenance), waste processing, and refueling. The dose assignments to various duty functions may be estimated based on pocket dosimeter, TLD, or film badge measurements. Small exposures totalling less than 20 percent of the individual total dose need not be accounted for. In the aggregate, at least 80 percent of the total whole body dose received from external sources should be assigned to specific major work functions.

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<sup>1/</sup> A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station.

<sup>2/</sup> This tabulation supplements the requirements of §20.407 of 10 CFR Part 20.

## ADMINISTRATIVE CONTROLS

- b. The complete results of the steam generator tube in service inspections performed during the report period (Reference Specification 4.4.5.5.b.).
- c. The results of specific activity analysis in which the primary coolant exceeded the limits of Specification 3.4.8. The following information shall be included: (1) Reactor power history starting 48 hours prior to the first sample in which the limit was exceeded; (2) Results of the last isotopic analysis for radioiodine performed prior to exceeding the limit, results of analysis while limit was exceeded and results of one analysis after the radioiodine activity was reduced to less than limit. Each result should include date and time of sampling and the radioiodine concentrations; (3) Clean-up system flow history starting 48 hours prior to the first sample in which the limit was exceeded; (4) Graph of the I-131 concentration and one other radioiodine isotope concentration in microcuries per gram as a function of time for the duration of the specific activity above the steady-state level; and (5) The time duration when the specific activity of the primary coolant exceeded the radioiodine limit.

### MONTHLY OPERATING REPORT

6.9.1.6 Routine reports of operating statistics and shutdown experience, including documentation of all challenges to the Reactor Coolant System PORVs or safety valves, shall be submitted on a monthly basis to the Director, Office of Management and Program Analysis, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the Regional Office of Inspection and Enforcement, no later than the 15th day of each month following the calendar month covered by the report.

## ADMINISTRATIVE CONTROLS (Continued)

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### SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Regional Administrator, Region II, within the time period specified for each report. These reports shall be submitted covering the activities identified below pursuant to the requirement of the applicable reference specification:

- a. Inservice Inspection Program Reviews shall be reported within 90 days of completion. Specification 4.0.5.
- b. ECCS Actuation shall be reported within 90 days of the occurrence. The report shall describe the circumstances of the actuation and the total accumulated cycles to date. Specifications 3.5.2 and 3.5.3.
- c. DELETED
- d. With sealed sources or fission detector leakage tests revealing the presence of  $>0.005$  microcuries of removable contamination submit a special report on an annual basis outlining the corrective actions taken to prevent the spread of contamination. Specification 4.7.11.1.3.
- e. With the MTC more positive than  $0 \Delta k/k/^{OF}$  submit a special report within the next 10 days describing the value of the measured MTC, the interim control rod withdrawal limits and the predicted average core burnup necessary for restoring the positive MTC to within its limit for the all rods withdrawn condition. Specification 3.1.1.4.
- f. For any abnormal degradation of the structural integrity of the reactor vessel or the Reactor Coolant System pressure boundary detected during the performance of Specification 4.4.10.1, an initial report shall be submitted within 10 days after detection and a detailed report submitted within 90 days after the completion of Specification 4.4.10.1.
- g. For any abnormal degradation of the containment structure detected during the performance of Specification 4.6.1.6.2, an initial report shall be submitted within 10 days after completion of Specification 4.6.1.6.2. A final report, which includes (1) a description of the condition of the liner plate and concrete, (2) inspection procedure, (3) the tolerance on cracking and (4) the corrective actions taken, shall be submitted within 90 days after the completion of Specification 4.6.1.6.2.
- h. Inoperable Fire Detection Instrumentation, Specification 3.3.3.7.
- i. Inoperable fire Suppression Systems, Specifications 3.7.14.1, 3.7.14.2, 3.7.14.3, 3.7.14.4 and 3.7.14.5.

## ADMINISTRATIVE CONTROLS (Continued)

### 6.10 RECORD RETENTION

In addition to the applicable record retention requirements of Title 10, Code of Federal Regulations, the following records shall be retained for at least the minimum period indicated.

6.10.1 The following records shall be retained for at least five years:

- a. Records and logs of facility operation covering time interval at each power level.
- b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.
- c. ALL REPORTABLE EVENTS and Special Reports.
- d. Records of surveillance activities, inspections and calibrations required by these Technical Specifications.
- e. Records of changes made to Operating Procedures.
- f. Records of radioactive shipments.
- g. Records of sealed source leak tests and results.
- h. Records of annual physical inventory of all sealed source material of record.
- i. Records of the annual audit of the Station Emergency Plan and implementing procedures.
- j. Records of the annual audit of the Station Security Plan and implementing procedures.

6.10.2 The following records shall be retained for the duration of the Facility Operating License:

- a. Records and drawing changes reflecting facility design modifications made to systems and equipment described in the Final Safety Analysis Report.
- b. Records of new and irradiated fuel inventory, fuel transfers and assembly burnup histories.
- c. Records of facility radiation and contamination surveys.
- d. Records of radiation exposure for all individuals entering radiation control areas.
- e. Records of gaseous and liquid radioactive material release to the environs.
- f. Records of transient or operational cycles for those facility components identified in Table 5.7-1.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 96 AND 83 TO

FACILITY OPERATING LICENSE NO. 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

INTRODUCTION

By letter dated June 1, 1987, the Virginia Electric and Power Company (the licensee) proposed changes to the Technical Specifications (TS) for the North Anna Power Station, Units No. 1 and No. 2 (NA-1&2). The changes are associated with primary coolant specific activity limits specified in NRC Generic Letter 85-19, "Reporting Requirements on Primary Coolant Iodine Activity."

DISCUSSION

The licensee has requested that the NA-1&2 TS 3/4.4.8, B3/4.4.8, 6.9.1.5.c, and 6.9.2.f be amended in order to comply with NRC Generic Letter 85-19, dated September 27, 1985. Generic Letter 85-19 requested that TS amendments be submitted from facilities which currently have TS which require reporting via a Special Report (SR) or Licensee Event Report (LER) upon exceeding coolant iodine activity limits, or have TS requirements to shutdown after 800 hours with iodine above the limit. Generic Letter 85-19 reduced the reporting requirements for iodine spiking from a Short-Term Report to an item which is to be included in the Annual Report. The information to be included in the Annual Report is similar to that previously required but changed to more clearly designate the results to be included from the specific activity analysis and to delete the information regarding fuel burnup. Generic Letter 85-19 also requests TS changes to eliminate the existing requirement to shutdown a plant if coolant iodine activity limits are exceeded for 800 hours in a 12 month period.

EVALUATION

These administrative changes, as discussed above, are clearly specified in Generic Letter 85-19. Also, the deletion of the requirement to shutdown if the coolant activity limit is exceeded for more than 800 hours in any 12 month period is not considered necessary because of the increased quality of nuclear fuel production and management as discussed in the NRC Generic Letter 85-19.

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Finally, the present requirement of 10 CFR Part 50.72(g)(1)(ii) for immediate notification if fuel clad failures exceed expected values should preclude approaching the 800 hour limit. Therefore, based on all of the above, the staff finds these changes to be acceptable.

#### ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The 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 published a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, the 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 the amendments.

#### CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: March 11, 1988

#### Principal Contributors:

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