

December 12, 2001

Mr. David A. Christian  
Sr. Vice President and Chief Nuclear Officer  
Virginia Electric and Power Company  
5000 Dominion Blvd.  
Glen Allen, Virginia 23060-6711

SUBJECT: NORTH ANNA POWER STATION, UNITS 1 AND 2 - ISSUANCE OF  
AMENDMENTS RE: CONTROL ROOM EMERGENCY HABITABILITY  
SYSTEMS INCREASE NUMBER OF COMPRESSED AIR BOTTLES AND  
REVISE DIFFERENTIAL PRESSURE LIMIT FOR FILTER ASSEMBLIES  
(TAC NOS. MB0759 AND MB0760)

Dear Mr. Christian:

The Commission has issued the enclosed Amendment Nos. 228 and 209 to Facility Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station, Unit Nos. 1 and 2. The amendments change the Technical Specifications (TS) in response to your letter dated December 14, 2000.

These amendments revise TS Sections 4.7.7.1.d.1. and 4.7.7.2.a. These changes will increase the specified minimum number of compressed bottles of air from 84 to 102 bottles, and will revise the differential pressure limit across the Control Room Emergency Ventilation System HEPA Filter, demister filter, and charcoal adsorber.

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,

/RA/

Stephen R. Monarque, Project Manager, Section 1  
Project Directorate II  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-338 and 50-339

Enclosures:

1. Amendment No. 228 to NPF-4
2. Amendment No. 209 to NPF-7
3. Safety Evaluation

cc w/encls: See next page

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VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-338

NORTH ANNA POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 228  
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 December 14, 2000, 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. 228 , 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 its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Richard J. Laufer, Acting Chief, Section 1  
Project Directorate II  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 12, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 228

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 areas of change.

Remove Pages

3/4 7-22

3/4 7-23

Insert Pages

3/4 7-22

3/4 7-23

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 209  
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 December 14, 2000, 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. 209 , 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 its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Richard J. Laufer, Acting Chief, Section 1  
Project Directorate II  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 12, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 209

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 areas of change.

Remove Pages

3/4 7-19

3/4 7-20

Insert Pages

3/4 7-19

3/4 7-20

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 228 TO FACILITY OPERATING LICENSE NO. NPF-4  
AND AMENDMENT NO. 209 TO FACILITY OPERATING LICENSE NO. NPF-7  
VIRGINIA ELECTRIC AND POWER COMPANY  
NORTH ANNA POWER STATION, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-338 AND 50-339

1.0 INTRODUCTION

By letter dated December 14, 2000, Virginia Electric and Power Company (the licensee) requested license amendments to the North Anna Power Station Units 1 and 2 (NAPS) Technical Specifications (TS) surveillance requirements (SRs) 4.7.7.1.d.1 and 4.7.7.2.a associated with the control room emergency ventilation systems.

The license amendments will revise the TS by increasing the specified minimum number of compressed bottles of air. The proposed changes will also revise the differential pressure limit across the control room emergency ventilation system HEPA filter, demister filter, and charcoal adsorber.

2.0 BACKGROUND

The control room bottled air pressurization system for each unit currently consists of a 51-bottle primary and a 51-bottle redundant bank. During the Design Basis Accident (DBA) period, while the containment is returning to subatmospheric pressure, bottled compressed air is used to provide an emergency supply of breathing quality air to the control room for a period of 1 hour during accident conditions. The bottled air also pressurizes the control room to at least .05 inches water gauge (W.G.) with respect to the surrounding areas. In addition, the bottled air system is used to pressurize the control room instead of the emergency ventilation system (filtered outside air) due to the high level of airborne radioactivity on the site that is postulated for up to 1 hour after accident conditions. This current compressed air bottle configuration is monitored in accordance with SR 4.7.7.2.a.

The current pressure drop across the HEPA filter and charcoal adsorber assembly is identified in the current SR 4.7.7.1.d.1. A value of less than 6 inches W.G. while operating the filter train at a flow rate of 1000 cfm +/- 10 percent is specified. However, the fan maximum static pressure is about 5.2 inches W.G. static pressure at a flow of 700 cfm. Because of current field conditions, the existing 6-inch W.G. limit is not a meaningful value and does not provide for effective monitoring of system conditions.

The licensee performed an engineering study and test of the control room bottled air pressurization system. Results are discussed in the following staff evaluation.

### 3.0 EVALUATION

By letter dated December 14, 2000, the licensee requested a plant modification that will increase the minimum number of compressed air bottles required in TS SR 4.7.7.2.a from the currently specified number of 84 compressed air bottles to a proposed number of 102 compressed air bottles. In addition, TS SR 4.7.7.1.d.1 will be changed from its current filtration pressure drop of <6 inches W.G. to <4 inches W.G.

The proposed TS changes will increase the number of compressed air bottles required to meet SR 4.7.7.2.a from 84 to 102 air bottles and allow consistency with the licensee's test results and design basis. The licensee performed an engineering study and test to evaluate the adequacy of the control room bottled air pressurization system. The individual pressure indicator readings and measured air flow of the bottle air test indicated that the flow rate delivered to the control room was not adequate to consistently satisfy the test acceptance criteria. Based on the engineering study recommendations, the number of compressed air bottles was increased from 84 to 102 bottles per unit. The additional air bottles were not required to be maintained operable in accordance with the existing SR 4.7.7.2.a or 4.7.7.2.b required flow rates.

Increasing the minimum required number of compressed air bottles to 102 in order to maintain the bottled air pressurization system capacity does not change the operation of NAPS. The change to more compressed air bottles imposes more conservative operability requirements for the control room envelope and supporting systems. The staff agrees with the licensee that the proposed change will ensure that the control room emergency ventilation system will be operable, thus ensuring that control room operator doses remain within the limits of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, General Design Criteria (GDC) 19. Therefore, based upon the above, the staff finds increasing the number of compressed air bottles from 84 to 102 acceptable.

With regard to the filtration train pressure drop, the licensee's current SR 4.7.7.1.d.1 states, "Verify that the pressures drop across the HEPA filter train and charcoal adsorber assembly is less than 6 inches W.G. while operating the filter train at a flow rate of 1000 cfm +/- 10%." The maximum static pressure that the supply fan can produce is 5.2 inches W.G. at a flow rate of 700 cfm. Thus, the existing 6-inch W.G. limit is arbitrary, and it does not provide for actual monitoring of the system conditions. Also, the current SR limit does not take into consideration the differential pressure across the demister filter.

The licensee's assessment based on the engineering study results indicates that the total differential pressure approximates the sum of the three main component differential pressures in the system (HEPA, charcoal, and demister) and is estimated to be 1.76 inches W.G. This approximate sum of system pressure drops can be compared to the fan differential pressure, which is about 5.1 inches of W.G. at a flow rate of 1000 cfm. In order to maintain the required positive pressure in the control room envelope, there is a margin of about 3.34 inches W.G. in the system's main components. Therefore, based upon the given fan curve, if the demister filter, HEPA filter, and charcoal adsorber differential pressure is maintained less than 4.0 inches of W.G., then the system pressure and flow rate performance will be acceptable. It is also noted by the licensee that excess flow will result in a residence time of less than 0.25 seconds per 2 inches of charcoal bed. If the system flow is considerably below the required flow, then the fans may not be able to maintain the required pressurization of the control room envelope.

The proposed revision to <4 inches W.G. across the demister filter, HEPA filter, and charcoal adsorber does not change plant operations. The lower differential pressure imposes a more conservative operability requirement on the control room pressurization system. Measuring and monitoring the differential pressure across the entire filter assembly (demister filter, HEPA filter, and charcoal adsorber) provides a better indication of the filter assembly's ability to perform its intended safety function.

Based on the above licensee's engineering study and test results, the staff agrees with the licensee that a pressure drop of less than 4 inches W.G. across the demister filter, HEPA filter, and charcoal adsorber will ensure that the control room pressurization system provides the correct flow rates and pressures to accomplish its design basis function of complying with 10 CFR Part 50, Appendix A, GDC 19 requirements. Therefore, based upon the above, the staff finds the proposed change for pressure differential of less than 4 inches W.G. across the filtration train 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 comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change surveillance requirements. 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 issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (66 FR 7687). 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.

#### 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: V. Klco

Date: December 12, 2001

Mr. David A. Christian  
Virginia Electric and Power Company

North Anna Power Station  
Units 1 and 2

cc:

Mr. C. Lee Lintecum  
County Administrator  
Louisa County  
P.O. Box 160  
Louisa, Virginia 23093

Mr. David A. Heacock  
Site Vice President  
North Anna Power Station  
P.O. Box 402  
Mineral, Virginia 23117-0402

Mr. Donald P. Irwin, Esquire  
Hunton and Williams  
Riverfront Plaza, East Tower  
951 E. Byrd Street  
Richmond, Virginia 23219

Mr. Richard H. Blount, II  
Site Vice President  
Surry Power Station  
Virginia Electric and Power Company  
5570 Hog Island Road  
Surry, Virginia 23883-0315

Dr. W. T. Lough  
Virginia State Corporation  
Commission  
Division of Energy Regulation  
P.O. Box 1197  
Richmond, Virginia 23209

Robert B. Strobe, M.D., M.P.H.  
State Health Commissioner  
Office of the Commissioner  
Virginia Department of Health  
P. O. Box 2448  
Richmond, Virginia 23218

Old Dominion Electric Cooperative  
4201 Dominion Blvd.  
Glen Allen, Virginia 23060

Mr. William R. Matthews  
Vice President - Nuclear Operations  
Virginia Electric and Power Company  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060-6711

Mr. Stephen P. Sarver, Director  
Nuclear Licensing & Operations Support  
Virginia Electric and Power Company  
Innsbrook Technical Center  
5000 Dominion Blvd.  
Glen Allen, Virginia 23060-6711

Office of the Attorney General  
Commonwealth of Virginia  
900 East Main Street  
Richmond, Virginia 23219

Senior Resident Inspector  
North Anna Power Station  
U.S. Nuclear Regulatory Commission  
1024 Haley Drive  
Mineral, Virginia 23117