September 4, 2002

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

SUBJECT: NORTH ANNA POWER STATION, UNIT 2 - ISSUANCE OF AMENDMENT AND EXEMPTION FROM THE REQUIREMENTS OF 10 CFR PART 50, SECTIONS 50.44 AND 50.46, AND APPENDIX K RE: IRRADIATION OF ONE LEAD FUEL ASSEMBLY WITH ADVANCED CLADDING MATERIALS BEYOND CURRENT LEAD ROD BURNUP LIMIT (TAC NO. MB4044)

Dear Mr. Christian:

The Commission has issued the enclosed Amendment No. 213 to Facility Operating License No. NPF-7 for the North Anna Power Station, Unit No. 2. The amendment changes the Facility Operating License in response to your letter dated February 11, 2002, as supplemented by letter dated May 16, 2002. The supplement dated May 16, 2002, contained clarifying information and did not change the initial proposed no significant hazards consideration determination or expand the scope of the initial application.

This amendment approves of a license condition to allow operation with one lead test assembly containing advanced zirconium-based alloys for one additional cycle with a lead rod burnup not exceeding 75,000 MWD/MTU.

In addition, your letter dated February 11, 2002, as supplemented by letter dated May 16, 2002, requested an exemption from the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Sections 50.44 and 50.46, and Appendix K to allow for the use of zirconium-based alloy cladding in the lead test assembly to be used during Cycle 16 at North Anna, Unit 2. Based upon the review of the information provided, the staff has determined that the use of zirconium-based alloys is acceptable. Accordingly, the staff, pursuant to 10 CFR 50.12(a), has issued an exemption for the North Anna Power Station, Unit 2.

A copy of the supporting Safety Evaluation and the exemption are enclosed. The exemption and the Notice of Issuance of Amendment have been forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

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

Docket No. 50-339

Enclosures:
1. Amendment No. 213 to NPF-7
2. Safety Evaluation
3. Exemption

cc w/encls: See next page

A copy of the supporting Safety Evaluation and the exemption are enclosed. The exemption and the Notice of Issuance of Amendment have been forwarded to the Office of the Federal Register for publication.

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VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-339

NORTH ANNA POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 213
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 February 11, 2002, as supplemented by letter dated May 16, 2002, 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 adding Paragraph 2.C(3)e as indicated in the attachment to this license amendment.

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

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

John A. Nakoski, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
License Page 3a

Date of Issuance: September 4, 2002

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 213 TO FACILITY OPERATING LICENSE NO. NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNIT NO. 2

DOCKET NO. 50-339

1.0 INTRODUCTION

By letter dated February 11, 2002, as supplemented by letter dated May 16, 2002, Virginia Electric and Power Company (the licensee) submitted a request for an amendment and exemption for the North Anna Power Station, Unit 2. The supplement dated May 16, 2002, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination.

The proposed amendment would add a license condition to allow the licensee to operate with one lead test assembly containing advanced zirconium-based alloy during Cycle 16, to a lead rod burnup not exceeding 75,000 MWD/MTU. As part of this submittal, the licensee requested an exemption from Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Sections 50.44 and 50.46, and Appendix K to 10 CFR 50 to use advanced zirconium-based cladding instead of the Zircaloy or ZIRLO cladding that is approved by these regulations. The lead test assembly to be used for this program is one of four lead test assemblies fabricated by Framatome Advanced Nuclear Power (Framatome ANP) that have been irradiated for three cycles at North Anna, Unit 1.

2.0 REGULATORY EVALUATION

By letters dated May 9, 1997, the staff approved the use of four lead test assemblies (LTAs) that were fabricated by Framatome ANP to be irradiated at either North Anna Unit 1 or 2. The staff approval included a burnup limit of 60,000 MWD/MTU peak rod average, and limited the irradiation of these assemblies to not more than three full operating cycles. These LTAs have since completed three cycles of operation in North Anna, Unit 1. In order to obtain high burnup data, the licensee has proposed to irradiate one of these LTAs for a fourth cycle at North Anna, Unit 2, during Cycle 16 of operation, to achieve a burnup of 73,000 MWD/MTU peak rod. The LTA will be irradiated in the center position of the core for typical reactor operations. This LTA has been demonstrated as mechanically similar to and compatible with the resident Westinghouse fuel used in North Anna, Unit 2, during three cycles of operation in North Anna, Unit 1.

This LTA design uses cladding and structural materials of advanced alloys M4 and M5 that were approved previously for irradiation in North Anna, Unit 1. The staff approved the M5 alloy

in a safety evaluation report dated February 4, 2000, that documented the staff's review of Topical Report BAW-10227P-A, "Evaluation of Advanced Cladding and Structural Material (M5) in PWR Reactor Fuel." Although the M4 alloy is slightly different from the M5 alloy in chemical composition, both M4 and M5 are zirconium-based alloys. The licensee requested that the staff approve a proposed license condition for the use of the LTA with these alloys irradiated to 75,000 MWD/MTU peak rod burnup. Technical Specification 5.3.1 and Updated Final Safety Analysis Report (UFSAR) Section 4.2.1 allow irradiation of a small number of LTAs with zirconium-based cladding. Thus, no TS or UFSAR changes are required for the proposed program.

The following paragraphs provide the regulatory requirements on which the staff based its acceptance.

10 CFR 50.44, "Standards for combustible gas control system in light-water-cooled power reactors," specifies requirements for the control of hydrogen gas generated after a postulated loss-of-coolant accident (LOCA) for reactors fueled with Zircaloy or ZIRLO cladding.

10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light water nuclear power reactors," contains acceptance criteria for emergency core cooling systems (ECCSs) for reactors fueled with Zircaloy or ZIRLO cladding.

Appendix K to 10 CFR Part 50, "ECCS Evaluation Models," requires that the Baker-Just equation be used to predict the rates of energy release, hydrogen concentration, and cladding oxidation from the metal-water reaction. However, the Baker-Just equation assumes the use of Zircaloy clad fuel.

Thus, an exemption from the requirements of 10 CFR 50.44, 10 CFR 50.46, and 10 CFR Part 50, Appendix K is needed for North Anna, Unit 2, to irradiate the LTA of fuel rods clad with M4 and M5 advanced cladding materials.

3.0 TECHNICAL EVALUATION

The staff has reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment that are described in its submittal. The detailed evaluation below will support the conclusion 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.

3.1 Mechanical Design

The mechanical properties of advanced alloys M4 and M5 are very similar to the Zircaloy and ZIRLO mechanical properties since these alloys are all zirconium-based materials with some slightly different chemical compositions. Framatome ANP conducted extensive out-of-reactor tests to verify the mechanical performance of alloys M4 and M5. These advanced cladding materials have been irradiated for three cycles and have performed satisfactorily at North Anna, Unit 1. The staff reviewed the mechanical properties and performance, and has approved the

M5 alloy for cladding and structural material based on its review of Topical Report BAW-10227P-A. Based on the previous irradiation performance and the staff's review of the use of M5, the staff concludes that the selected LTA mechanical design will perform satisfactorily for the North Anna, Unit 2, Cycle 16 core.

3.2 Core Design

Traditionally, the staff has placed the following restrictions on LTA programs: (1) the number of LTAs should be limited, and (2) the core locations of LTAs should be non-limiting (not in the highest power regions). Recently, the staff has endorsed the concept of locating LTAs next to the highest power regions to appropriately simulate typical reactor operations. In North Anna, Unit 1, the four LTAs were located in relatively high power regions for three cycles. Regarding the North Anna, Unit 2, Cycle 16 core, the licensee indicated that the selected LTA will be located next to a very high power fuel assembly to obtain pertinent high burnup data. The physical differences between the Framatome ANP LTA and the resident Westinghouse fuel are small, as demonstrated in the previous North Anna, Unit 1, core design. Thus, the selected LTA is essentially identical in neutronic behavior as the resident fuel assemblies. The licensee stated that the total heat flux hot channel factor (F_Q) and the hot channel factor ($F_{\Delta H}$) margins will be preserved for the LTA and no reactor safety or operating limits will be modified to accommodate the LTA high burnup irradiation. Based on the conservative analyses that were performed using approved methods, and the adequate margins that were demonstrated, the staff concludes that the Cycle 16 core design incorporating the LTA is acceptable for North Anna, Unit 2.

3.3 LOCA Analysis and ECCS Exemption

10 CFR 50.12(a) enables the Commission, under special circumstances, to issue exemptions from the requirements of 10 CFR Part 50 that are authorized by law, do not present an undue risk to the public health and safety, and are consistent with the common defense and security. 10 CFR 50.12(a)(2)(ii) defines special circumstances to include a situation where the application of the regulation in the particular circumstances would not serve the underlying purpose of the rule, or is not necessary to achieve the underlying purpose of the rule. The underlying purpose of 10 CFR 50.46 and 10 CFR Part 50, Appendix K, is to establish requirements for the calculation of ECCS performance.

Paragraph I.A.5 of Appendix K to 10 CFR Part 50 states that the rates of energy, hydrogen concentration, and cladding oxidation from the metal-water reaction shall be calculated using the Baker-Just equation. Since the Baker-Just equation presumes the use of Zircaloy clad fuel, strict application of the rule would not permit use of the equation for advanced zirconium-based alloys for determining acceptable fuel performance. The underlying intent of this portion of the Appendix, however, is to ensure that analysis of fuel response to LOCAs is conservatively calculated. Due to the similarities in the chemical composition of the advanced zirconium-based alloys and Zircaloy, the application of the Baker-Just equation in the analysis of advanced zirconium-based clad fuel will conservatively bound all post-LOCA scenarios. Because strict appreciation of Paragraph 1.A.5 of 10 CFR Part 50, Appendix K is not necessary to ensure conservative calculation of fuel response during LOCAs, in this case special circumstances exist that allow the licensee to apply the Baker-Just equation to advanced zirconium-based alloys.

The licensee has performed a calculation demonstrating adequate ECCS performance for North Anna, Unit 2, and has shown that the LTA does not have a significant impact upon the calculation. The peak cladding temperature of the LTA was significantly lower than the resident Westinghouse fuel. Using the Baker-Just equation, the result conservatively predicted local cladding oxidation of the LTA of only a few percent. Also, the maximum hydrogen generation was unchanged with the inclusion of the LTA. Therefore, the coolable geometry was maintained following a LOCA.

The staff confirmed that the licensee used approved LOCA methods to perform the calculations that demonstrated adequate safety performance of ECCS systems. These include: (1) RSG LOCA-BWNT LOCA evaluation model (BAW-10168, Rev. 3), (2) RELAP5/MOD2-B&W code (BAW-10164, Rev. 3), (3) the BEACH implementation of RELAP5 (BAW-10166, Rev. 4), and (4) REFLOD3B (BAW-10171-PA, Rev. 3). The licensee documented calculations based on these models to demonstrate that existing North Anna calculations based on the current fuel design conservatively bound the LOCA performance of the LTA as calculated by the NRC-approved methods. Results of comparative LOCA calculations with the same plant operating parameters demonstrated that the LOCA calculational methods used are acceptable for the LTA at North Anna, Unit 2. Therefore, the licensee has achieved the underlying purpose of 10 CFR 50.46 and 10 CFR Part 50, Appendix K, satisfying the special circumstance provisions of 10 CFR 50.12(a)(2)(ii).

10 CFR 50.44 sets standards for combustible gas control while assuming the use of ZIRLO or Zircaloy clad fuels. The underlying purpose of 10 CFR 50.44 is to ensure that means are provided for the control of hydrogen gas that may be generated following a LOCA. The licensee has provided means for controlling hydrogen gas and has previously considered the potential for hydrogen gas generation stemming from a metal-water reaction. The LTA containing advanced zirconium-based cladding being chemically similar to the Zircaloy cladding ensures that previous calculations of hydrogen production resulting from a metal-water reaction would not be significantly changed. As such, the licensee will continue to achieve the underlying purpose of 10 CFR 50.44 while irradiating the LTA, satisfying the special circumstance provisions of 10 CFR 50.12(a)(2)(ii).

The LTA meets the same design bases and requirements as the resident Westinghouse fuel for the North Anna, Unit 2, Cycle 16 core. No safety limits or setpoints have been altered as a result of the use of the LTA. The LTA will be placed in a core location that will not experience the most limiting power peaking during the aforementioned operating cycle. The advanced cladding has been irradiated and tested for corrosion resistance, tensile and burst strength, and creep characteristics. The results indicate that the advanced cladding should be acceptable for reactor service. Therefore, granting the exemption requests described above will not present an undue risk to public health and safety, and would be consistent with the common defense and security.

Based on the previously acceptable performance of the four lead test assemblies at North Anna, Unit 1, and the subsequent approval of the advanced cladding material M5, the staff concludes that the licensee has demonstrated that the LTA will perform adequately under LOCA conditions, and thus the LTA is acceptable for operation in North Anna, Unit 2, Cycle 16. In addition, based on the special circumstances identified above, the staff determined that the requested exemption from the requirements of 10 CFR 50.44, 10 CFR 50.46, and 10 CFR Part 50, Appendix K, for the LTA in North Anna, Unit 2, is acceptable.

3.4 License Condition

The licensee proposed a license condition to use a selected LTA with the advanced zirconium-based alloys to be irradiated in the North Anna, Unit 2, Cycle 16 core. Based on the staff evaluation, the staff considers that the license condition is technically adequate and therefore acceptable for North Anna, Unit 2. The new license condition is stated as follows:

> VEPCO may operate one lead test assembly containing advanced zirconium-based alloys for one cycle, to a lead rod burnup not exceeding 75,000 MWD/MTU, as described in the licensee's submittal dated February 11, 2002.

3.5 Summary

The staff has reviewed the licensee's submittal of a proposed exemption and license condition to support the use of an LTA with advanced alloy cladding.

Based on the staff evaluation, the staff approves the license condition to insert one LTA with the advanced zirconium-based alloy for one cycle to a peak rod-average burnup not exceeding 75,000 MWD/MTU for North Anna, Unit 2. The licensee has achieved the underlying purpose of applicable regulations including 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50. Furthermore, an exemption from these sections is justified because the LTA meets the same design bases as the resident Westinghouse fuel, and no safety limits or setpoints will be altered as a result of the LTA irradiation. An exemption will therefore not present an undue risk to public health and safety and is consistent with the common defense and security. Further, the staff found that it is not necessary to apply these requirements to achieve the underlying purpose of the subject rules. The staff approves the exemption from the requirements of 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50 for North Anna, Unit 2, Cycle 16.

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

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment has been published in the *Federal Register* on August 19, 2002 (67 FR 53813). Accordingly, the Commission has determined that the issuance of this amendment will not result in any environmental impacts other than those evaluated in the Final Environmental Statement.

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: Shih-Liang Wu

Date: September 13, 2002

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNIT 2

DOCKET NO. 50-339

EXEMPTION

1.0 BACKGROUND

The Virginia Electric and Power Company (the licensee) is the holder of Facility Operating License No. NPF-7, which authorizes operation of the North Anna Power Station, Unit 2. The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect.

The facility consists of a one pressurized-water reactor located in Louisa County in the Commonwealth of Virginia.

2.0 REQUEST/ACTION

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.44 requires reactors fueled with Zircaloy or ZIRLO cladding to control any hydrogen gas that may be generated after a postulated loss-of-coolant accident (LOCA). 10 CFR 50.46 identifies design requirements for calculating the performance of the emergency core cooling system (ECCS) for reactors containing fuel with Zircaloy or ZIRLO cladding. Finally, Appendix K to 10 CFR Part 50 requires the Baker-Just equation, which is only applicable for fuels using Zircaloy cladding, be used to predict the rates of energy release, hydrogen concentration, and cladding oxidation from the metal water reaction.

By letter dated February 11, 2002, as supplemented by letter dated May 16, 2002, the licensee submitted a request for a license amendment to irradiate a Framatome lead test assembly during Cycle 16 at North Anna, Unit 2. The lead test assembly to be used is one of four lead test assemblies that have been used for the past three operating cycles at North Anna, Unit 1. Included in this proposed license amendment was a request for an exemption from the requirements of 10 CFR 50.44, 50.46, and Appendix K to 10 CFR Part 50 that would allow the licensee to use a lead test assembly that consisted of two advanced zirconium-based alloys, M4 and M5, for the fuel rod cladding. The licensee included the following license condition in its submittal:

> Virginia Electric and Power Company may operate one lead test assembly containing advanced zirconium-based alloys for one cycle, to a lead rod burnup not exceeding 75,000 MWD/MTU.

3.0 DISCUSSION

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. In accordance with 10 CFR 50.12(a)(2)(ii), special circumstances exist whenever an application of a particular regulation under the circumstances is not necessary to achieve the underlying purpose of the rule.

The underlying purpose of 10 CFR 50.44 is to ensure that means are provided for the control of hydrogen gas that may be generated following a LOCA. The licensee has provided means for controlling hydrogen gas and has previously considered the potential for hydrogen gas generation stemming from a metal-water reaction. The chemical similarity of the lead test assembly containing advanced zirconium-based cladding with that of the Zircaloy cladding

ensures that previous calculations of hydrogen production resulting from a metal-water reaction would not be significantly changed. As such, the licensee has achieved the underlying purpose of 10 CFR 50.44.

The underlying purpose of 10 CFR 50.46 and 10 CFR Part 50, Appendix K, is to establish requirements for the calculation of ECCS performance. The licensee has performed a calculation demonstrating adequate ECCS performance for North Anna, Unit 2, and has shown that the lead test assembly does not have a significant impact upon the calculation. The peak cladding temperature of the lead test assembly was significantly lower than the resident Westinghouse fuel. Using the Baker-Just equation, the result conservatively predicted local cladding oxidation of the lead test assembly of only a few percent. Also, the maximum hydrogen generation was unchanged with the inclusion of the lead test assembly. Therefore, the coolable geometry was maintained following a LOCA.

Paragraph I.A.5 of Appendix K to 10 CFR Part 50 states that the rates of energy, hydrogen concentration, and cladding oxidation from the metal-water reaction shall be calculated using the Baker-Just equation. Since the Baker-Just equation presumes the use of Zircaloy clad fuel, strict application of the rule would not permit use of the equation for advanced zirconium-based alloys for determining acceptable fuel performance. The underlying intent of this portion of the Appendix, however, is to ensure that analysis of fuel response to LOCAs is conservatively calculated. Due to the similarities in the chemical composition of the advanced zirconium-based alloys and Zircaloy, the application of the Baker-Just equation in the analysis of advanced zirconium-based clad fuel is justified and will conservatively bound all post-LOCA scenarios. Thus the underlying purpose of the rule will be met, and special circumstances exist, allowing the staff to grant an exemption from Appendix K to 10 CFR Part 50 that would allow the licensee to apply the Baker-Just equation to advanced zirconium-based alloys.

The staff confirmed that the licensee used approved LOCA methods to perform the calculations that demonstrated adequate safety performance of ECCS systems. These methods include: (1) RSG LOCA-BWNT LOCA evaluation model (BAW-10168, Rev. 3), (2) RELAP5/MOD2-B&W code (BAW-10164, Rev. 3), (3) the BEACH implementation of RELAP5 (BAW-10166, Rev. 4), and (4) REFLOD3B (BAW-10171-PA, Rev. 3). The licensee documented calculations based on these models to demonstrate that existing North Anna calculations based on the current fuel design conservatively bound the LOCA performance of the lead test assembly as calculated by the NRC-approved methods. Results of comparative LOCA calculations with the same plant operating parameters demonstrated that the LOCA calculational methods used are acceptable for the lead test assembly at North Anna, Unit 2. Therefore, the licensee has achieved the underlying purpose of 10 CFR 50.46 and 10 CFR Part 50, Appendix K.

The lead test assembly meets the same design bases and requirements as the resident Westinghouse fuel for the North Anna, Unit 2, Cycle 16 core. No safety limits or setpoints have been altered as a result of the use of the lead test assembly. The lead test assembly will be placed in a core location that will not experience the most limiting power peaking during the aforementioned operating cycle. The advanced cladding has been irradiated and tested for corrosion resistance, tensile and burst strength, and creep characteristics. The results indicate that the advanced cladding should be acceptable for reactor service. Therefore, granting the exemption requests will not present an undue risk to public health and safety or be inconsistent with the common defense and security.

Based on the previously acceptable performance of the four lead test assemblies at North Anna, Unit 1, and the subsequent approval of the advanced cladding material M5, the staff concludes that the licensee has demonstrated that the lead test assembly will perform adequately under LOCA conditions, and thus the lead test assembly is acceptable for operation

in North Anna, Unit 2, Cycle 16. In addition, based on the special circumstances described above, the staff approves of an exemption from the requirements of 10 CFR 50.44, 10 CFR 50.46, and 10 CFR Part 50 Appendix K for the lead test assembly in North Anna, Unit 2.

4.0 CONCLUSION

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. Also, special circumstances are present. Therefore, the Commission hereby grants the licensee an exemption from the requirements of 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50, for North Anna Power Station, Unit 2. This exemption only applies to the one lead test assembly containing advanced zirconium-based alloys for the one operating cycle, with a lead rod burnup not exceeding 75,000 MWD/MTU.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (67 FR 53813).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 4th day of September 2002.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

John A. Zwolinski, Director
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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

Ms. Lillian M. Cuocco, Esq.
Senior Nuclear Counsel
Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Building 475, 5th floor
Rope Ferry Road
Rt. 156
Waterford, Connecticut 06385

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

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

Mr. Stephen P. Sarver, Director
Nuclear Licensing & Operations Support
Virginia Electric 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

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

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

Mr. 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

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