

February 21, 1986

Docket No. 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:

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The Commission has forwarded the enclosed "Notice of Consideration of Issuance of Amendment to Facility Operating License NPF-7 and Proposed No Significant Hazards Consideration Determination and Opportunity for Hearing" to the Office of the Federal Register for publication.

This notice relates to your application dated September 26, 1985, amended by letter of January 16, 1986, which would revise the North Anna Power Station, Unit 2 (NA-2), Technical Specifications (TS) by implementing VEPCO's "Relaxed Power Distribution Control Methodology and Associated FQ Surveillance TS." The proposed change would provide additional operating flexibility for the NA-2 end-of-cycle No. 4.

Sincerely,

/s/

Leon B. Engle, Project Manager  
PWR Project Directorate #2  
Division of PWR Licensing-A  
Office of Nuclear Reactor Regulation

Enclosure:  
As stated

cc w/Encl: See next page

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2/20/86

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North Anna Power Station

Atomic Safety and Licensing Appeal  
Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Regional Administrator  
USNRC, Region II  
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Atlanta, Georgia 30323

Mr. E. W. Harrell  
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Mineral, Virginia 23117

Old Dominion Electric Cooperative  
c/o Executive Vice President  
Innsbrook Corporate Center  
4222 Cox Road, Suite 102  
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Mr. Richard C. Klepper  
Board of Supervisors  
Louisa County Courthouse  
P.O. Box 27  
Louisa, Virginia 23093

UNITED STATES NUCLEAR REGULATORY COMMISSIONVIRGINIA ELECTRIC AND POWER COMPANY, ET AL.DOCKET NO. 50-339NOTICE OF CONSIDERATION OF ISSUANCE OF AMENDMENT TO  
FACILITY OPERATING LICENSE AND PORPOSED NO SIGNIFICANT HAZARDS  
CONSIDERATION DETERMINATION AND OPPORTUNITY FOR HEARING

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. NPF-7, issued to Virginia Electric and Power Company and Old Dominion Electric Cooperative (the licensee), for operation of the North Anna Power Station, Unit No. 2 (NA-2) located in Louisa County, Virginia, in accordance with the licensee's application for amendment dated September 26, 1985, and amended on January 16, 1986.

The proposed changes would allow the widening of the axial flux difference bands from the current  $\pm 5\%$  about a target value of  $+6\%$  to  $-15\%$  at 100% power and  $+20\%$  to  $-28\%$  at 50% power. The proposed changes would provide additional operating flexibility during return-to-power after trips near the end of the NA-2 cycle No. 4.

The heat flux hot channel factor (FQ) operating limit specified in the NA-2 Technical Specifications (NA-2) is established by loss-of-coolant accident/emergency core cooling system (LOCA/ECCS) analyses performed in accordance with 10 CFR Part 50, Appendix K. These analyses show that if the FQ limit is not exceeded, the predicted LOCA peak clad temperature will not exceed the

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2200°F limit specified in the Final ECCS Acceptance Criteria. The TS also establish the required method for verification that the actual peaking factor realized during operation will not exceed the axially dependent peaking factor (FQ(Z)) limit. This verification is currently performed by combining the axially dependent radial peaking factor,  $F_{xy}(Z)$ , which is determined by periodic surveillance with the core flux monitoring system, with an analytically determined axial peaking factor (PZ(Z)). The determination of PZ(Z) involves evaluating various plant operating maneuvers such as load following. During constant Axial Offset Control (CAOC) operation, the measured core axial flux difference (AFD) is maintained within a fixed band (+ or -5%) of a target value. The target AFD is established by equilibrium operating conditions.

The proposed changes would replace the CAOC AFD limits with a set of limits established by the licensee's Relaxed Power Distribution Control (RPDC) Methodology and Associated FQ Surveillance Technical Specifications dated October 1984. The NRC staff has reviewed the report and finds it to be acceptable.

The important feature of the RPDC strategy is, instead of analytically verifying the peaking factor (FQ) margin for a fixed AFD limit band, the AFD band is varied until the available FQ margin, which increases as power decreases, is utilized. Because a wider range of axial shapes can be realized under RPDC normal operation, additional analyses must be performed to verify that the overtemperature delta-T (OTDT) and overpower delta-T trips continue to provide adequate DNB and local overpower (high kw/ft) protection over the entire range of anticipated Condition II events. In addition, the shapes are evaluated as potential preconditions for the Complete Loss of Flow

accident, to ensure that no departure from nuclear boiling (NDB) violations would occur during the bounding, non-OTDT-protected accident. The methodology for performing this verification is discussed in detail in the licensee's RPDC report.

Additionally, the current requirement for monitoring the axially dependent radial peaking factor,  $F_{xy}(Z)$ , is being replaced by a requirement to monitor the total peaking factor  $FQ(Z)$ . This is accomplished by taking a full core flux map under equilibrium and increasing the measured value by appropriate factors to account for manufacturing tolerances and measurement uncertainties. Finally, since the  $FQ(Z)$  is measured under equilibrium conditions, a non-equilibrium factor,  $N(Z)$  is applied.  $N(Z)$  accounts for the maximum potential increase in local peaking which could occur during transient, nonequilibrium operation. In accounting for the transient effects,  $N(Z)$  thus has a function which is similar to  $PZ(Z)$  in the current approach. The difference is that, where  $PZ(Z)$  is a nonequilibrium axial peaking factor,  $N(Z)$  envelopes the potential equilibrium-to-nonequilibrium  $FQ$  increase and accounts for both axial and radial xenon and power redistribution effects.

The licensee has performed a detailed review of the impact of operation with Relaxed Power Distribution Control/ $FQ$  Surveillance on the various accident scenarios discussed in Chapter 15 of the North Anna updated Final Safety Analysis Report (UFSAR). Specifically, the impact of the wider axial flux difference on key safety parameters which could influence accident analysis results has been assessed. Among those parameters considered are: trip reactivity, both total value and reactivity as a function of rod insertion; shutdown margin; reactivity insertion rates due to rod withdrawal from subcritical and at power; and rod worths and/or peaking factors for ejected, dropped or misaligned control rods.

The NA-2 Cycle 4 reload core design has been evaluated for operation under the proposed RPDC Technical Specifications in accordance with the methodology presented in the licensee's RPDC report. The analysis included examination of the LOCA and complete Loss of Flow Accident (LOFA) preconditions, the peak linear power (kw/ft), the overtemperature  $\Delta T$  f( $\Delta I$ ) function and the fuel rod design criteria. Each analysis was performed at beginning, middle and end of cycle. The analysis results yielded two conclusions: 1) none of the normal operation conditions allowed by RPDC were found to violate the key safety criteria, and 2) all of the Condition II events examined in the UFSAR were shown to yield acceptable results when initiated from any of these normal operation conditions. The RPDC bands were thus found to be an acceptable operating space.

The Commission has made a proposed determination that the request for amendment involves no significant hazards consideration. Under the Commission's regulations in 10 CFR 50.92, this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. Specifically, as discussed above, the proposed changes involve only a relaxation of the limits in axial power distribution skewing and, therefore, neither the probability of occurrence nor the consequences of any accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is increased

by these proposed changes. Furthermore, the RPDC analysis procedures and continued application of current reload design and safety analysis methodology will ensure that the UFSAR accident analyses remain bounding.

Also, the proposed changes do not involve any alterations to the physical plant which introduce any new or unique operational modes or accident precursors. Thus the possibility for an accident or malfunction of a different type than any evaluated previously in the UFSAR is not being created by the proposed changes. And, finally, while a relaxation of the axial offset operating limits is realized, the margin of safety as defined in the basis for any technical specification is not reduced by the proposed changes since the margins of safety are preserved by the imposition of a frequent FQ surveillance requirement and by effectively reducing the limit on measured equilibrium FQ by a conservative nonequilibrium factor,  $N(Z)$ . Therefore, based on these considerations and the criteria given above, the Commission has made a proposed determination that the amendment request does not involve a significant hazards consideration.

The Commission is seeking public comments on this proposed determination. Any comments received within 30 days after the date of publication of this notice will be considered in making any final determination. The Commission will not normally make a final determination unless it receives a request for a hearing.

Comments should be addressed to the Rules and Records Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

By March 28, 1986 , the licensee may file a request for a hearing with respect to issuance of the amendment to the subject facility operating license and any person whose interest may be affected by this proceeding and who wishes to participate as a party in the proceeding must file a written petition for leave to intervene. Request for a hearing and petitions for leave to intervene shall be filed in accordance with the Commission's "Rules of Practice for Domestic Licensing Proceedings" in 10 CFR Part 2. If a request for a hearing or petition for leave to intervene is filed by the above date, the Commission or an Atomic Safety and Licensing Board, designated by the Commission or by the Chairman of the Atomic Safety and Licensing Board Panel, will rule on the request and/or petition and the Secretary or the designated Atomic Safety and Licensing Board will issue a notice of hearing or an appropriate order.

As required by 10 CFR §2.714, a petition for leave to intervene shall set forth with particularity the interest of the petitioner in the proceeding, and how that interest may be affected by the results of the proceeding. The petition should specifically explain the reasons why intervention should be permitted with particular reference to the following factors: (1) the nature of the petitioner's right under the Act to be made a party to the proceeding; (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any order which may be entered in the proceeding on the petitioner's interest. The petition should also identify the specific aspect(s) of the subject matter of the proceeding as to which petitioner wishes to intervene. Any person who has filed a petition for leave to intervene or who has been admitted as a party may amend the petition without requesting leave of the Board up to

fifteen (15) days prior to the first prehearing conference scheduled in the proceeding, but such an amended petition must satisfy the specificity requirements described above.

Not later than fifteen (15) days prior to the first prehearing conference scheduled in the proceeding, a petitioner shall file a supplement to the petition to intervene which must include a list of the contentions which are sought to be litigated in the matter, and the bases for each contention set forth with reasonable specificity. Contentions shall be limited to matters within the scope of the amendments under consideration. A petitioner who fails to file such a supplement which satisfies these requirements with respect to at least one contention will not be permitted to participate as a party.

Those permitted to intervene become parties to the proceeding, subject to any limitations in the order granting leave to intervene, and have the opportunity to participate fully in the conduct of the hearing, including the opportunity to present evidence and cross-examine witnesses.

If a hearing is requested, the Commission will make a final determination on the issue of no significant hazards consideration. The final determination will serve to decide when the hearing is held.

If the final determination is that the amendment request involves no significant hazards consideration, the Commission may issue the amendment and make it effective, notwithstanding the request for a hearing. Any hearing held would take place after issuance of the amendment.

If a final determination is that the amendment involves a significant hazards consideration, any hearing held would take place before the issuance of any amendment.

Normally, the Commission will not issue the amendment until the expiration of the 30-day notice period. However, should circumstances change during the notice period such that failure to act in a timely way would result, for example, in derating or shutdown of the facility, the Commission may issue the license amendment before the expiration of the 30-day notice period, provided that its final determination is that the amendment involves no significant hazards consideration. The final determination will consider all public and State comments received. Should the Commission take this action, it will publish a notice of issuance and provide for opportunity for a hearing after issuance. The Commission expects that the need to take this action will occur very infrequently.

A request for a hearing or a petition for leave to intervene must be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch, or may be delivered to the Commission's Public Document Room, 1717 H Street, N.W., Washington, DC, by the above date. Where petitions are filed during the last ten (10) days of the notice period, it is requested that the petitioner promptly so inform the Commission by a toll-free telephone call to Western Union at (800) 325-6000 (in Missouri (800) 342-6700). The Western Union operator should be given Datagram Identification Number 3737 and the following message addressed to Lester S. Rubenstein: (petitioner's name and telephone number), (date petition was mailed), (plant name), and (publication date and page number of this FEDERAL REGISTER notice). A copy of the petition should also be sent to the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to Michael W. Mauphin, Esq., Hunton, Williams, Gay and Gibson, P. O. Box 1535, Richmond, Virginia 23212, attorney for the licensee.

Nontimely filings of petitions for leave to intervene, amended petitions, supplemental petitions and/or requests for hearing will not be entertained absent a determination by the Commission, the presiding officer or the Atomic Safety and Licensing Board designated to rule on the petition and/or request, that the petitioner has made a substantial showing of good cause for the granting of a late petition and/or request. That determination will be based upon a balancing of the factors specified in 10 CFR 2.714(a)(1)(i)-(v) and 2.714(d).

For further details with respect to this action, see the application for amendment dated September 26, 1985 as amended January 16, 1986, which is available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, DC, and at the Board of Supervisors Office, Louisa County Courthouse, Louisa, Virginia 23093 and the Alderman Library, Manuscripts Department, University of Virginia, Charlottesville, Virginia 22901.

Dated at Bethesda, Maryland, this 20 day of February, 1986.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by

L. S. Rubenstein

Lester S. Rubenstein, Director  
PWR Project Directorate #2  
Division of PWR Licensing-A

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