

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

W. L. STEWART  
VICE PRESIDENT  
NUCLEAR OPERATIONS

August 3, 1983

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
Attn: Mr. Robert A. Clark, Chief  
Operating Reactors Branch No. 3  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Serial No. 726E  
Docket Nos. 50-338  
50-339  
License Nos. NPF-4  
NPF-7

Gentlemen:

SUPPLEMENT TO AMENDMENT TO OPERATING LICENSES NPF-4 AND NPF-7  
NORTH ANNA POWER STATION UNIT NOS. 1 AND 2  
REACTOR COOLANT SYSTEM TEMPERATURE OF 587.8°F

In our letter dated December 30, 1982 (Serial No. 726), Vepco requested an amendment to Operating Licenses NPF-4 and NPF-7 to allow operation of North Anna Unit Nos. 1 and 2 at a reactor coolant system average temperature of 587.8°F. This letter provides in Attachment 1 supplemental information in answer to questions discussed with a member of the Staff's Core Performance Branch on June 27, 1983 and July 21, 1983.

Should you have any further questions, please contact us at your earliest convenience.

Very truly yours,

*W. L. Stewart*  
W. L. Stewart

Attachment

- (1) Response to Core Performance Branch  
Question to North Anna 7.5°F Tavg Increase

cc: Mr. James R. O'Reilly  
Regional Administrator  
Region II

Mr. George Schwenk  
Core Performance Branch

Mr. M. B. Shymlock  
NRC Resident Inspector  
North Anna Power Station

Mr. Charles Price  
Department of Health  
109 Governor Street  
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ATTACHMENT 1

RESPONSE TO CORE PERFORMANCE

BRANCH QUESTION FOR NORTH ANNA 7.5°F TAVG INCREASE

## ATTACHMENT 1

### RESPONSE TO CORE PERFORMANCE BRANCH QUESTION FOR NORTH ANNA 7.5°F TAVG INCREASE

#### Question

Since the Technical Specification changes for the 7.5°F uprating require that measured flow be greater than 285,000 gpm, how will this flow be confirmed by plant measurements and what uncertainty would be applied to the measured value? In the NSSS safety evaluation, the Vepco submittal states that the calorimetric method of determining RCS flow at North Anna includes a total flow uncertainty of 1.75 percent. The NRC was not aware of having approved use of uncertainty values less than 3.5 percent for any utilities.

#### Response

As indicated in our submittal, the North Anna Unit 1 & 2 calorimetric data support a measured core inlet volumetric flow rate of at least 302,100 gpm with 2.8 percent of the steam generator tubes plugged. Conservatively accounting for a steam generator tube plugging level of 5 percent, the measured flow would decrease by less than one percent and the resulting RCS flow would be at least 299,000 gpm. North Anna RCS flow measurements have continued to demonstrate that the flow margin between the 285,000 gpm employed in the accident analysis and the measured flow is sufficiently large that measurement uncertainty should not be an issue.

It was indicated that the NRC was not aware of having approved the use of a Reactor Coolant System (RCS) flow uncertainty value less than 3.5 percent for any utility. Vepco has previously submitted data to the NRC in 1977 for the Surry units via References 1 and 2 supporting a 2 percent RCS flow measurement uncertainty. Vepco has been utilizing the 2 percent uncertainty for the Surry and North Anna units since the NRC granted approval of Change No. 57 to the Technical Specifications per Reference 3. Based on data available to us the NRC has also approved an RCS flow uncertainty of 1.7 percent flow with a flow calorimetric uncertainty of 1.5 percent flow for the McGuire units. This approval is contained in the letter from E. G. Adensam (NRC) to H. B. Tucker (Duke Power Company), dated June 28, 1983. The examples cited above may not be the only instances where utilities have submitted and obtained approval of an RCS flow measurement uncertainty of less than 3.5 percent.

Presently the North Anna Unit Nos. 1 and 2 Technical Specifications require that RCS flow be measured every 18 months and that flow be verified (by instrument readout) to be greater than the thermal design flow every 12 hours (T. S. 4.2.5.1; 4.2.5.2). This flow measurement verification is performed periodically via station procedure from secondary plant calorimetric data. It is our intent to continue this practice in the future.

We believe that the impact of the flow measurement uncertainty is of no consequence on the uprating package submitted, especially in light of the demonstrated margin between measured and analysis flows. Therefore, we propose that review of the 7.5°F uprating package should proceed and that the matter of flow measurement uncertainty be considered separately.

#### REFERENCES

1. Letter, C. M. Stallings (Vepco) to Edson G. Case (NRC), Amendment to the Operating License, Technical Specifications Change No. 57, Surry Power Station Units 1 and 2, Serial No. 344, August 9, 1977.
2. Letter, C. M. Stallings (Vepco) to Edson G. Case (NRC), Supplemental Information to Amendment to the Operating License, Technical Specifications Change No. 57, Surry Power Station Units 1 and 2, Serial No. 516/111077, November 16, 1977.
3. Letter, R. W. Reid (NRC) to W. L. Proffitt (Vepco), dated December 2, 1977.