

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

May 16, 2002

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 02-068A
NL&OS/ETS R0
Docket No. 50-339
License No. NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT NO. 2
SUPPLEMENTAL INFORMATION ON
PROPOSED IRRADIATION OF ONE LEAD FUEL ASSEMBLY
WITH ADVANCED CLADDING MATERIALS
BEYOND CURRENT LEAD ROD BURNUP LIMIT

In our letter of February 11, 2002 (Serial Number 02-068), Virginia Electric and Power Company (Dominion) requested an amendment to Facility Operating License NPF-7 for North Anna Power Station Unit 2 and exemptions from 10 CFR 50.44, 10 CFR 50.46, and Appendix K of 10 CFR 50. The amendment and exemptions will permit Dominion to irradiate a lead test assembly to extended burnup levels in North Anna Unit 2 Cycle 16. The purpose of this letter is to inform you of a planned change to one of the computer codes being used to perform cycle specific evaluations to support the proposed irradiation program.

In Attachment 1 of our submittal, in the "Evaluation of Proposed Extended Burnup Program" section, we indicated that the NRC-approved Framatome ANP (Framatome) fuel rod design code, TACO3, would be used for the evaluations of the end of life fuel rod internal pressure, clad strain, and fuel rod heat rate to melt, and for the calculation of the initial hot pin fuel temperatures used in the LOCA evaluation. Another Framatome fuel rod design code, COPERNIC, was under NRC review when our request was submitted. Framatome has since received the NRC Safety Evaluation Report for COPERNIC and has indicated to Dominion that it intends to use the COPERNIC code for the fuel rod analyses for the extended burnup of the lead test assembly.

The COPERNIC computer code is an improved fuel performance code for the design and analysis of fuel rods with uranium dioxide and uranium-gadolinia fuels that incorporates models developed for Framatome's advanced cladding material, M5. The North Anna lead test assembly that will be irradiated for a fourth operating cycle uses

A001

this advanced alloy for most of the fuel rods as well as for the fuel assembly guide thimbles. Another advanced alloy with similar properties, M4, is also used for the cladding for a small number of fuel rods in the assembly. The COPERNIC code has been globally benchmarked to 67 GWD/MTU, and the thermal models have been benchmarked to over 100 GWD/MTU. Therefore, this code is suitable for predicting the behavior of the fuel at the high burnups that the North Anna lead test assembly is expected to achieve.

Framatome plans to use the COPERNIC code in place of TACO3 for the evaluations of the end of life (hot) fuel rod internal pressure, clad strain, and fuel rod heat rate to melt for the lead test assembly in North Anna 2 Cycle 16. The COPERNIC code will be used to calculate the initial hot pin fuel temperatures, which are used as input into the LOCA evaluation for the assembly. COPERNIC is also being used to evaluate the end of life (cold) rod internal pressure for spent fuel pool (fuel handling accident) considerations.

The lead rod burnup in the North Anna lead test assembly will exceed the 62 GWD/MTU rod average burnup levels for which TACO3 and COPERNIC were approved by the NRC for licensing applications. Therefore, the evaluation of the fuel performance for the lead test assembly will require NRC approval of the application of the COPERNIC code and associated methods to burnups beyond the current licensed limits. However, since the COPERNIC code was benchmarked to burnups exceeding the 62 GWD/MTU limit, the code is expected to yield reliable predictions at the projected burnups for the lead test assembly

We are continuing to perform our cycle specific evaluations of North Anna 2 Cycle 16 assuming that the lead test assembly will be irradiated for a fourth cycle in the center core location. North Anna Unit 2 Cycle 16 is scheduled to begin operation in October 2002. To minimize the potential for a significant redesign effort late in the normal reload design process, we request that the NRC inform Dominion as soon as possible of any concerns related to the proposed irradiation of this assembly or the use of the alternate fuel performance code. We request final NRC approval of this program by August 15, 2002, to support completion of the North Anna 2 Cycle 16 design under the normal reload design schedule.

If you have any questions or require additional information on this, please contact us.

Very truly yours,



L. N. Hartz
Vice President - Nuclear Engineering

Commitments made in this letter: None

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