

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 30, 1988

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

Serial No. 88-497
PES/NPW:jmj
Docket No. 50-338
License No. NPF-4

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 1
PROPOSED LICENSE AMENDMENT AND EXEMPTION REQUEST
FUEL ASSEMBLIES WITH ADVANCED CLADDING MATERIALS

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company requests an amendment, in the form of a license condition, to Operating License NPF-4 for North Anna Unit 1. The proposed amendment would permit the use of additional zirconium based advanced cladding material in two fuel assemblies. We request that the proposed amendment be approved for implementation during the next refueling outage for Unit 1. This outage is currently scheduled for the second quarter of 1988 as described by our letter dated September 12, 1988, Serial No. 88-511. Approval of this amendment also requires the granting of an exemption from 10 CFR 50.46.

North Anna Unit 1 is currently operating with the two assemblies containing fuel rods clad with an advanced zirconium based material as approved by the NRC in your letter of May 13, 1987. The purpose of the proposed amendment is to permit the use of an additional zirconium based advanced cladding material in the same two fuel assemblies starting in North Anna Unit 1 Cycle 8. The proposed license condition is provided in Attachment 1. To support this change, Attachment 2 provides a safety evaluation of the impact of using the two fuel assemblies with the additional advanced cladding material.

We have determined that approval of this proposed license amendment also requires the granting of an exemption from 10CFR50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors," because "Zircaloy" is specified in 10CFR50.46. 10CFR50.12 permits the NRC to grant exemptions from the requirements in 10CFR Part 50 for special circumstances as described in 10CFR50.12(a)(2). One such special circumstance is when the application of a regulation ". . . would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." In this case, application of the provision of 10CFR50.46 calling for the use of approved emergency core cooling system (ECCS) models for reactors with Zircaloy clad fuel is not necessary. This is because the approved ECCS model remains the basis for ECCS design even though the two lead

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test assemblies will contain fuel rods clad with additional zirconium based advanced cladding material which has not yet been demonstrated to fall within the term "Zircaloy." In addition, the use of these lead assemblies with additional zirconium based advanced cladding material will conform to current fuel design bases, does not change the existing reload design and safety analysis limits, and therefore appears to satisfy to the NRC guidelines for lead test assemblies.

The following information is provided to support the NRC's environmental assessment.

Environmental Assessment - Supporting Information

Identification of Proposed Action and Need for Proposed Action:

Virginia Electric and Power Company proposes to use two lead test assemblies in the North Anna Unit 1 reactor core. These assemblies will contain fuel rods clad with an additional zirconium based advanced alloy. Although this new zirconium based alloy is very similar to "Zircaloy," whether or not this new alloy falls within the scope of 10CFR50.46 which applies to "Zircaloy" clad fuel is unclear. As in the case of the previous license amendment allowing the use of a new zirconium based clad material (NRC letter dated May 13, 1987), resolution of this question will involve a substantial effort to research the rulemaking record on which 10CFR50.46 was based. In the absence of such resolution, an exemption from the provision of 10CFR50.46 limiting its application to "Zircaloy" clad fuel is needed to permit authorization of the use of the new clad material. Furthermore, test experience with a limited number of assemblies for design development purposes provides important data to determine whether new designs can provide performance improvement while maintaining a high standard of safety performance.

Environmental Impact of the Proposed Action:

Reactor operation with the additional new cladding material will not be significantly affected. The composition of this zirconium based alloy is very similar to "Zircaloy" in essential respects; moreover, the test assemblies are not located in the portions of the core expected to experience highest burnup and highest power density. The safety assessment summarized in Attachment 2 shows that performance of these assemblies in the event of a Loss of Coolant Accident (LOCA) will be bounded by the performance previously calculated for other zircaloy clad assemblies in the core, which was based on accepted ECCS evaluation models.

Based on the information presented in Attachment 2, we have concluded that the use of two test assemblies containing the additional new alloy in the North Anna Unit 1 reactor would conform to all current fuel design bases, would not change the existing reload design safety analysis limits, and appears to satisfy the NRC guidelines for lead test assemblies.

As a result, the use of the two lead test assemblies would not affect the probability or consequences of potential reactor accidents. In addition, this proposed exemption does not otherwise affect radiological plant effluents. Accordingly, we conclude that there are no significant radiological impacts associated with the proposed exemption.

With regard to potential non-radiological impacts, the proposed exemption involves features located entirely within the restricted area as defined in 10CFR20. Implementation of the proposed exemption will not affect non-radiological plant effluents and will have no other significant non-radiological environmental impact.

Alternatives to the Proposed Action:

The previous section provides the basis for concluding that there are no environmental effects which would result from approval of the requested exemption. Accordingly, any alternatives with any environmental impact need not be evaluated. The only other alternative is to not use the additional new zirconium based clad material in the two lead assemblies. As stated above, however, test experience with a limited number of assemblies (in this case, two) for design development purposes provides important data to determine whether new designs can provide performance improvement while maintaining a high standard of safety performance.

Alternative Use of Resources:

The proposed action does not involve the use of environmental resources, and therefore does not involve the use of resources not previously considered in the Final Environmental Statement (as amended) for the North Anna Power Station, Unit Nos. 1 and 2.

Proposed Finding of No Significant Impact:

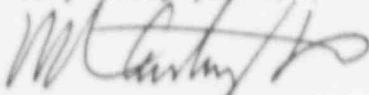
Based upon the foregoing environmental assessment, we conclude that approval of our exemption request will not have an effect on the quality of the human environment.

This license change request has been reviewed by the Station Nuclear Safety and Operating Committee and the Safety Evaluation and Control staff. It has been determined that this request does not involve any unreviewed safety questions as defined in 10CFR50.59 or a significant hazards consideration as defined in 10CFR50.92.

We have evaluated this request in accordance with the criteria in 10CFR170.12. A voucher check in the amount of \$150.00 is enclosed as an application fee.

As Attachment 2 contains information proprietary to Westinghouse Electric Corporation, it is supported by an affidavit (Attachment 4) signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b) (4) of Section 2.790 of the Commission's regulations. Accordingly, it is requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10CFR Section 2.790 of the Commission's regulations. Correspondence with respect to the proprietary aspects of the Application for Withholding or the supporting Westinghouse Affidavit should reference CAW-88-093 and should be addressed to R. A. Wieseemann, Manager of Regulatory & Legislative Affairs, Westinghouse Electric Corporation, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,



W. R. Cartwright
Vice President - Nuclear

Attachments

1. Proposed License Condition
2. 5 copies of Proposed License Amendment for Fuel Assemblies with Advanced Cladding Materials (Proprietary)
3. 5 copies of Proposed License Amendment for Fuel Assemblies with Advanced Cladding Materials (non-Proprietary)
4. Westinghouse Authorization Letter, CAW-88-093, Proprietary Information Notice, and accompanying Affidavit

cc: U. S. Nuclear Regulatory Commission
101 Marietta Street, N.W.
Suite 2900
Atlanta, GA 30323

Mr. J. L. Caldwell
NRC Senior Resident Inspector
North Anna Power Station

ATTACHMENT 4

WESTINGHOUSE AUTHORIZATION LETTER CAW-88-023

APPLICATION FOR WITHHOLDING PROPRIETARY

INFORMATION FROM PUBLIC DISCLOSURE

AND ACCOMPANYING AFFADAVIT