

May 19, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of)	
)	
VIRGINIA ELECTRIC AND POWER COMPANY)	Docket Nos. 50-338 O.L.
)	50-339 O.L.
(North Anna Nuclear Power Plant)	
Units 1 and 2)	

SUPPLEMENTAL TESTIMONY OF WARREN S. HAZELTON
AND CLIFFORD D. SELLERS REGARDING TURBINE
INSPECTION SCHEDULES FOR NORTH ANNA 1 AND 2

- Q. Gentlemen, please state your names and positions with the NRC.
- A. Warren S. Hazelton and Clifford David Sellers. We are,
respectively, Section Leader of the Materials Application Section
in the Materials Engineering Branch of the Division of Engineering
within the Office of Nuclear Reactor Regulation and Principal
Materials Engineer in the Materials Engineering Branch of the
Division of Engineering within the Office of Nuclear Reactor
Regulation of the Nuclear Regulatory Commission.

Copies of our professional qualifications were submitted as
attachments to "NRC Staff Testimony of Warren S. Hazelton and
Clifford D. Sellers Regarding Turbine Disc Cracking" which were
submitted to the Appeal Board on January 22, 1982 in the North
Anna 1 & 2 OL proceeding.

Q. Gentlemen, what is the purpose of this testimony?

A. This testimony addresses three questions raised by the Appeal Board in a letter to Mr. Swanson, Counsel for the Staff, dated May 10, 1982. These questions are as follows:

1. Was that statement intended to be an endorsement of Section D of the October 21, 1981 "memorandum of VEPCO's counsel on North Anna 1 and 2 turbine missile analysis", as revised in Mr. Christman's January 21, 1982 letter?

2. If so, precisely what inspection interval for each unit does the staff regard to be established by the representations contained in Section D of the October 21, 1981 memorandum, as revised?

3. If the staff was not endorsing the content of Section D of the October 21, 1981 memorandum, as revised, what does it deem to be the inspection schedules derived from the use of VEPCO's Exhibit V-1?

Q. In response to the first question, does the Staff endorse the numerical results of the Westinghouse analysis of inspection intervals for North Anna 1 & 2 as set forth in section I.D. of the referenced letter from VEPCO counsel to the Appeal Board dated October 21, 1981, as revised in the January 21, 1982 letter from VEPCO counsel to the Appeal Board?

A. Yes. As stated in the referenced October 21, 1981 letter, the Westinghouse schedule for inspection intervals for North Anna Unit 1 was derived from VEPCO Exhibit V-1. As indicated at page 5 of our referenced testimony, this report was reviewed by the Staff and was found to be an acceptable basis for setting inspection schedules. The Staff has also reviewed and approved VEPCO Exhibit V-6, from which the inspection schedule for Unit 2 is derived (Attachment 5 to the January 21, 1982 letter from VEPCO counsel). The Staff endorses this schedule as well as the schedule for Unit 1.

- Q. What is your response to the second question posed by the Appeal Board?
- A. The Staff believes that at this time the appropriate inspection interval times for the North Anna Units 1 and 2 turbines are 34.9 months and 32.5 months, respectively. These are the most conservative intervals represented in the inspection schedules for all low pressure turbine discs for each unit. See, attachment to referenced letter from VEPCO counsel dated January 21, 1982, at pages 3 and 12, and attachment 5 thereto.
- Q. Is this inspection interval consistent with the schedule proposed by VEPCO?
- A. No. Although the numbers associated with the Staff's recommended inspection intervals are taken from the VEPCO/Westinghouse's disc number 1 schedules, and have been specified by VEPCO as being the most conservative inspection intervals for the North Anna 1 and 2 turbines, VEPCO has taken the position that the less stringent inspection intervals associated with disc number 2 are appropriate. VEPCO argues that the number 1 discs for both units need not be factored into the inspection intervals since Westinghouse has evaluated the potential for a turbine missile to be ejected from the disc, and has concluded that potential missiles from the disc would be contained within the turbine casing.

The Staff has contracted out its review of the missile containment analysis, and this review has not yet been completed. Accordingly,

the Staff is not yet in a position to base a licensing decision on the results of the Westinghouse containment analysis. Therefore, we require that the turbine inspection interval for North Anna 1 and 2 be based on the most conservative (i.e. smallest) interval in the schedules developed by Westinghouse.

The Staff would likely agree, however, to an extension of an inspection interval on a case-by-case basis of up to 10% to accommodate refueling schedules for North Anna 1 or 2. Since there are such wide margins of safety incorporated into the inspection intervals, the Staff believes that such an extension would likely be warranted without need for further analysis of the critical crack size issue by the Staff. For example, the limiting inspection interval is based on achieving a crack which is only $\frac{1}{2}$ of the critical crack length for the discs, which is equivalent to our limiting operation of the facility to only $\frac{1}{2}$ of the time between inspections which could likely be accommodated. (See our previous testimony submitted on January 22, 1982, at pages 4-16). Any request for an extension of more than 10% of the inspection interval for a unit would require further analysis by the Staff.

We understand that VEPCO has committed to abide by the number 1 disc limiting inspection intervals until at least the next scheduled inspection, using the intervals of 34.9 and 32.5 months for Units 1 and 2, respectively. By that time, the Staff should

have concluded its evaluation of the Westinghouse turbine disc containment analysis, and will be able to factor that into its analysis of the appropriate inspection interval for the North Anna 1 and 2 turbines.

Q. In light of your answer above, do you consider the third question from the Appeal Board to be applicable?

A. No, since the Staff does endorse the content of Section I.D. of the October 21, 1981 memorandum, as revised.