UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Alan S. Rosenthal, Chairman
Dr. John H. Buck
Michael C. Farrar

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

MEMORANDUM AND ORDER

March 3, 1980

In mid-February, we tentatively scheduled a hearing for February 21 on the question of whether "continued operation of Unit 1 of the North Anna facility should be permitted pending the outcome of the further inquiries into the turbine disc cracking and missile energy matters" now being conducted (unpublished memorandum, February 12, 1980). As was contemplated, just before the hearing was to take place both the applicant and the NRC staff rapidly furnished us additional written material.[1/] That material set forth the reasons why both of those

1/ The applicant submitted an affidavit and a statement on Saturday, February 16th; for its part, the staff supplied its written appraisal of the matter under cover of a (FOOTNOTE CONTINUED ON NEXT PAGE)

parties believe that disc cracking should not pose a safety problem at North Anna in the near term (at least until the next scheduled refueling outage in December 1980).

Upon review of that material, we concluded that, at this early stage of the investigation of the disc cracking problem, a hearing was not now the best way to go about obtaining useful information beyond that contained in the papers before us. Those papers did go a long way toward establishing that operation of North Anna Unit 1 need not be halted now in order to conduct a lengthy inspection of its turbine.[2/] Accordingly, we cancelled the hearing.[3/]

Some topics covered in the papers, however, needed to be further developed. In that regard, the applicant's and staff's analyses both involved, inter alia, the prediction of a maximum

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1/ (FOOTNOTE CONTINUED FROM PREVICUS PAGE) letter dated Tuesday, February 19th. We had received other material prior to scheduling the hearing; for example, included in the documents accompanying the staff's letters of February 5th and February 8th was a Westinghouse booklet prepared in October 1979 and entitled "Notes on the Presentation by Westinghouse Electric Corporation to Electric Utility Executives". The order we are issuing today is based on our appraisal of all this material. A claim is pending that some of this material is proprietary in nature and thus should be protected from public disclosure.

2/ The purpose of such an inspection would be to look for evidence of the disc cracking phenomenon that has been discovered at other facilities that have been in operation for longer periods.

3/ We advised the parties of that decision by telephone the morning before the scheduled day of hearing.

crack size expected to occur within given periods of turbine operation.[4] Central elements employed in these analyses were crack growth rates. Both parties are now utilizing, as a basis for estimating such rates, graphs or curves said to reflect actual disc cracking experience.[5] Neither has, however, furnished us any details as to how those curves were generated.[6] Without this, we were unable to complete our evaluation of the basis for and validity of their positions.

Accordingly, the applicant and staff are each to furnish us, within three weeks of the date of this order, a more complete explanation of how they constructed and would justify the crack growth rate curves each has employed in the analyses already furnished to us. This should include a statement of their assumptions (and supporting reasons) regarding the timing of crack initiation. Additionally, at that time both parties are to inform us as to how soon they expect to be able

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4/ This figure is compared to a calculated value representing the critical crack size for each turbine disc. If the predicted crack size does not approach that critical level, then in theory there is no danger that at design speeds the turbine will fly apart.

5/ See Schmerling affidavit, p. 2; "Staff's Bases for the Continued Operation of North Anna Unit 1", p. 1.

6/ The staff did at least supply a copy of its curve; the applicant did not. It should do so now.

to furnish us with a more definite statement of whether, and to what extent, their earlier turbine missile testimony has been affected as a result of the discovery of the disc cracking phenomenon.7/

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Bishop
Secretary to the
Appeal Board

The concurring opinion of Mr. Rosenthal and the dissenting opinion of Dr. Buck follow, pp. 5-9, infra.

7/ As noted in our earlier order, our final opinion on the turbine missile safety issue (which was the subject of last June's hearing) must await the further information now being developed. It is likely that, once that information is forthcoming, we will find it necessary to hold a supplemental hearing.

Mr. Rosenthal, concurring:

I am fully persuaded that good reason exists for obtaining now the additional explanation requested herein. Even had I not been, I nonetheless would have joined Mr. Farrar in this order. In my view, any individual member of an appeal board is entitled to make a request of that nature in circumstances where he believes that additional information will assist in the discharge of his adjudicatory functions. That the other two members of the board might perceive no similar need for such assistance is of no moment.

DR. JOHN H. BUCK DISSENTING

I am not joining my colleagues in this request for further information from the licensee and staff because I believe the data requested are unnecessary at the present. Requiring further paper work at this time merely takes essential engineering manpower away from the efforts to reach a long-range solution to the present turbine questions.

As noted in our memorandum of February 12, 1980, the Board held a telephone conversation with the licensee and staff concerning the new information which had reached us about cracking in the Westinghouse turbines. This information involved not only the onset of cracking in several turbines, but also a question raised by Westinghouse that if a turbine blade did break there are some doubts about the energy which various parts of the broken blade would have.

During the course of our telephone conversation in which the Board stressed that its immediate concern was over the short-term operation of the turbine, the licensee while agreeing to a possible "quickie" hearing to be held on February 21, 1980, requested that it be allowed to submit affidavits concerning the problems by Tuesday February 19 (Monday February 18 being a Federal holiday).

The Board ordered that the papers be submitted to the individual members by Saturday February 16, stating at the same time that the requested paper was to be a brief statement -- not a full essay on the subject.[1/] The staff stated that it would not be able to submit their statement of the problem and reasons for continued short-term operation until late Tuesday February 19. The staff lawyer emphasized that such a paper would have to be a brief summary of their position. The Board accepted this schedule, agreeing to review the submissions before finally deciding on whether to hold a hearing on Thursday February 21.

The papers submitted by the licensee and staff did present their positions for continued operation of the North Anna facility pending final solution of the turbine missile problem. The licensee presented an affidavit by Jerome M. Schmerling, a professional metallurgist employed by Westinghouse, showing that on the basis of the critical crack size in the North Anna turbine and the expected crack growth rate in the

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1/ I specifically made this statement and no objections were raised by either of my colleagues during the telephone conference or in our conversations later that day.

discs (based on actual experience, the material of the discs and maximum temperature of operation) safe full-time operation could be expected until July 1983. The staff submitted similar papers by qualified metallurgists and mechanical engineers in which they stated that "[t]hese [calculational procedures] differ slightly from those of Westinghouse, but provide similar evaluations in most cases."

Neither set of papers treated the impact energy of the disc fragments since these calculations are still in progress and do not impact the staff's calculations for the missile strike probabilities for North Anna.

As expected, these "quickie" papers did not cross every "t" or dot every "i" but they provided the statements of the basic approach (based on experimental data and metallurgical principles) used in reaching the positions for temporary operation. With this information provided by two groups of recognized experts, it is my technical judgment that there is reasonable assurance that public health and safety will not be endangered by the operation of the North Anna for the next nine months (i.e., until the next scheduled shutdown).

Obviously, before the long-term operation is approved (i.e., before we render a finding on the turbine missile issue before us), more detail must be supplied on the cause of the cracking and preventive measures to be taken, along with final calculations for the energy of disc fragments should a disc break. But this information must await the conclusions of experiments and analysis now in progress and should be set forth in well-considered position papers by both licensee and NRC staff. The request by my lawyer colleagues, on the insistence of Mr. Farrar, for submission of further technical details now does nothing more than take necessary people away from their urgent work on these subjects thus causing delay in their final answers. In my opinion, this is nothing more than harassment of technical experts who are urgently trying to solve a problem.

I am surprised by the new Appeal Panel procedure propounded by Mr. Rosenthal in his concurrence. On its face it grants any single member of an appeal board the absolute right to delay the board's decision for whatever whimsical reason he might have.